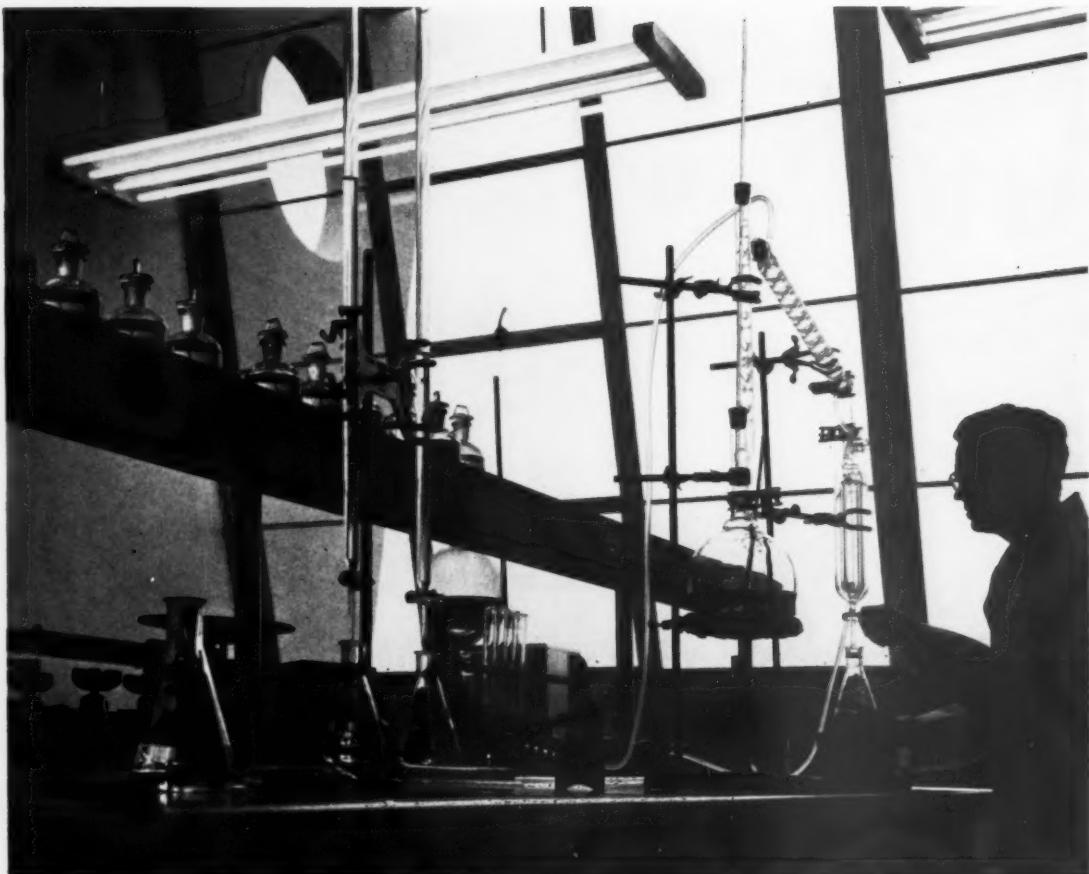


# Western Industry

February 1953

Profitable new fields for industry come out of the test tubes of this up-to-the-minute Western research laboratory . . . . . page 34



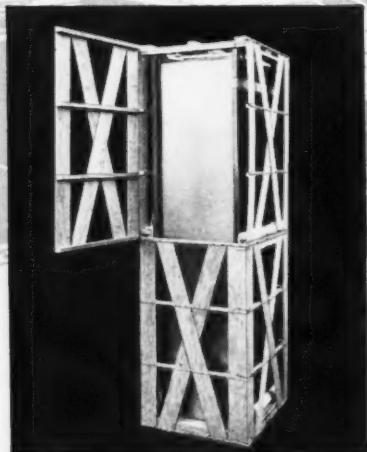
**Are you sure your plant  
is making money?**

No plant operation in the Western land-of-small-plants is too small for big business methods. Better check the article on page 39.

And how about profits on your machine set-ups? . . . on personnel? "Learning curve" analysis may open your eyes! See page 61.



*Like giant sewing machines, Cabco's rows of "stitchers" mass-produce wirebound containers at better than eight per minute.*



## **You get more from CABCO**

**...the West's foremost designer and manufacturer  
of wooden shipping containers**

Wood and wire. These are two ingredients of a Cabco wire-bound shipping container. But there's a third vital ingredient—one you never see, yet perhaps most important of all—*know-how!*

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That's one reason Cabco has designed and developed more new wooden containers than any other western manufacturer.

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**EXTRA-LARGE DOUBLE-MAT** crates shown here are a new application of the versatile wire-bound principle. The Double-Mat crates were developed by Cabco for a large wall furnace weighing over 200 pounds and standing 7 feet high. Two wire-bound mats are locked to each other and to the top and bottom without nails. The Double-Mat saves appreciably on initial cost and packing time, and weighs much less than a nailed crate of comparable size.

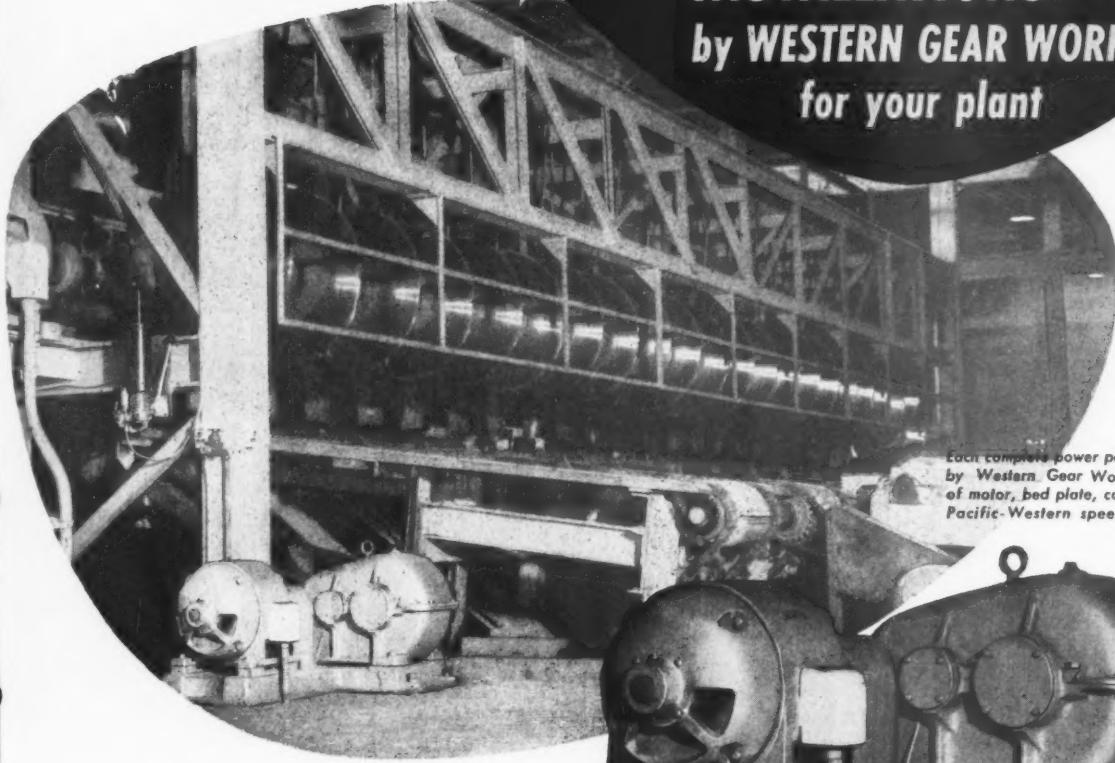
**CABCO**  
The California Barrel Company, Ltd.

*A product of the California Barrel Company, Ltd.*

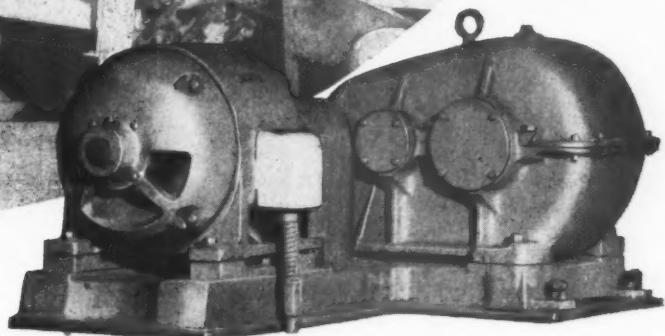
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for your plant



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Conveyors to the trimmer saw in a large western sawmill, illustrated above, are driven by power package units designed and produced by Western Gear Works.

**1** You save time by issuing one order to a single supplier for the complete power package unit for the job. There's no need for separate purchases of individual items with varying delivery dates from several suppliers. Single responsibility is assured when you call on Western Gear Works for your requirements.

For prompt assistance on your power transmission problems, call or write, at no obligation, your nearest Western Gear plant or representative.

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Engineering & Machinery Ltd., 1366 W. Broadway, Vancouver, B. C.



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FEBRUARY • 1953

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# Webb conveyors

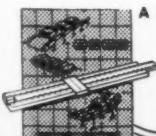
## CASE HISTORY

*Slash cost  
of handling  
small orders for  
Brunswick Drug*

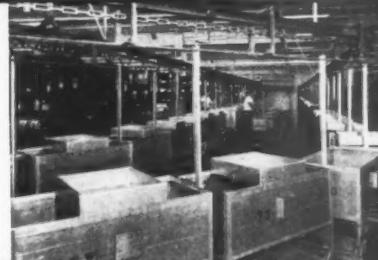
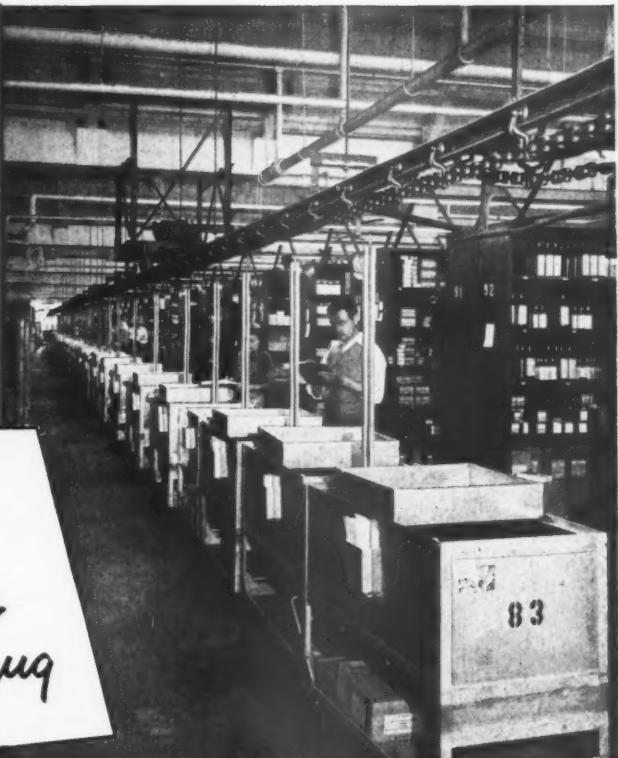
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COMPANY OF CALIFORNIA



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packers. Trucks are  
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chain conveyor.

**DELIVERS  
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ORDERS**  
LARGER ORDERS  
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order filling room to  
packers. Trucks are  
towed by overhead  
chain conveyor.  
Vertical rod on truck  
engages and disen-  
gages automatically.

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CIRCULATING  
STORAGE**  
A CONTINUOUS  
SUPPLY of boxes  
is delivered to  
packers by overhead  
chain conveyors.

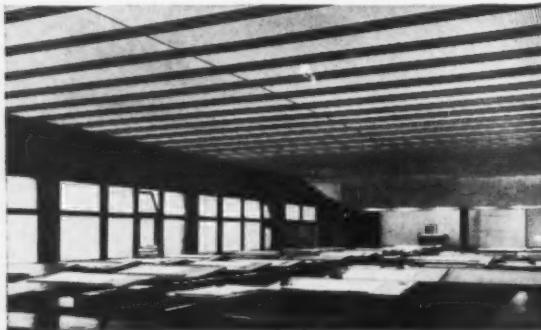
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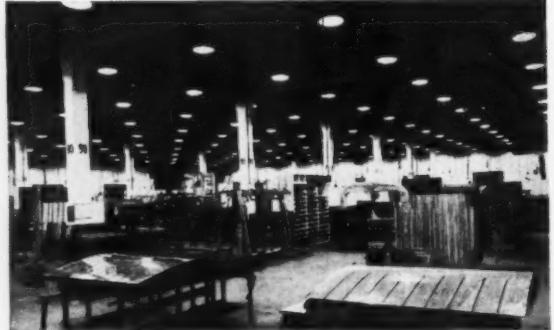
## This "eye" helps you hike production

In the hand of a trained lighting engineer, this sensitive photoelectric cell can show you ways to improve the lighting in your

plant and office space... to help step up production, get better work per man-hour. And this service is absolutely free!

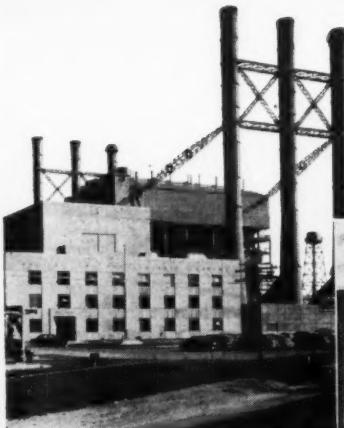


**OFFICE EFFICIENCY INCREASED.** Modern lighting like this has upped clerical efficiency in hundreds of offices. P. G. and E. files contain case histories where planned lighting paid for itself in economies—in 1 to 3 years! It's easy to do in California where P. G. and E. service is so cheap!



**SPOILAGE AND REJECTS CUT.** High-level plant illumination helps eliminate manufacturing errors, increases speed in precision work. Testimonials from well known California industrial plants show that planned lighting helped raise production levels substantially—in some cases as much as 15%.

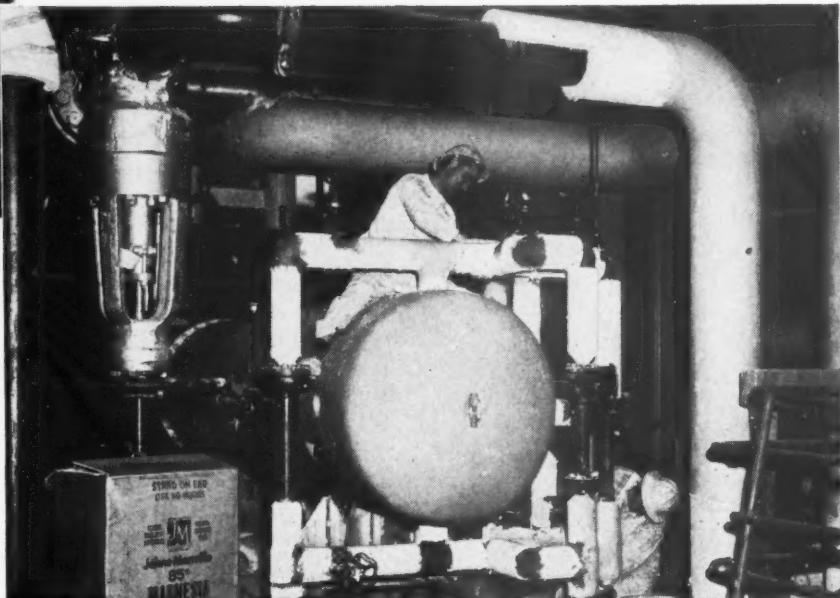
*Consult your lighting contractor or P. G. and E. lighting engineer for free planned lighting advice*



## At the new Moss Landing generating plant

**(Top)** Moss Landing, California steam plant of the Pacific Gas and Electric Company, designed by Stone and Webster Engineering Corporation, under the supervision of the P. G. and E. Engineering Dept.

**(Right)** Skilled applicators of an outstanding J-M Insulation Contractor, Western Asbestos Company of San Francisco, applying J-M 85% Magnesia to pipelines during construction of the Moss Landing plant.



## P. G. and E. INSULATES WITH SUPEREX-85% MAGNESIA TO LOWER POWER PRODUCTION COSTS

When Pacific Gas and Electric Company invested \$80,000,000 in its new 771,000-horsepower electric generating giant at Moss Landing, California...the insulation, like all other materials, had to meet rigid specifications. For this important project, Johns-Manville Superex-85% Magnesia double-layer insulation was used on superheated steam pipes.

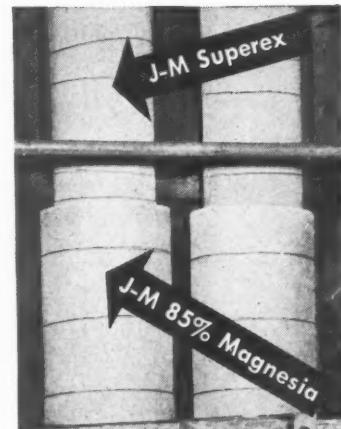
Superex Combination Insulation consists of Superex\*, a J-M insulation for temperatures to 1900F, and J-M 85% Magnesia. It was installed at the Moss Landing plant for maximum thermal efficiency and long trouble-free service. This double-layer construction, proved in over a quarter-century of outstanding on-the-job performance, utilizes the higher heat resistance of Superex next to the hot surface—the greater insulation value of J-M 85% Magnesia for the outer layer. It eliminates through joints, protects the jacket against scorching and

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For further information, write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.



Double-Layer Superex-85% Magnesia Insulation was used on superheated piping at the P. G. and E. Moss Landing plant.

\*Reg. U. S. Pat. Off.

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In countless ways, the versatile can is an essential part of convenient, modern living—thanks to the continuing research and ingenuity of can manufacturers and the canning industry.

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and sidewalks trowelled into the fresh  
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Tulare District Hospital, Tulare, Calif.



King Cole Market, Los Angeles, Calif.



Wilshire Medical Building, Los Angeles, Calif.

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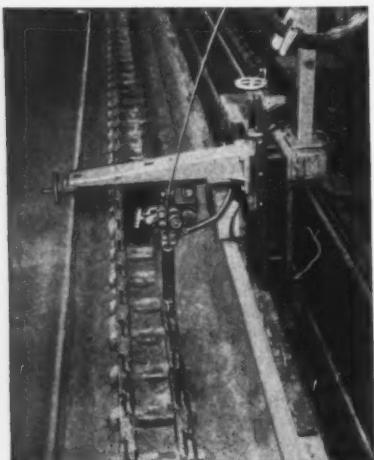


# LINDE'S News of Metalworking

## Worn Parts Rebuilt Economically by UNIONMELT Welding

Repair of worn tractor parts is most practical and economical with specially developed fixtures on which standard UNIONMELT welding units are mounted. The metal deposited by UNIONMELT welding is so smooth that no grinding or finishing is required. Experience indicates that resurfaced areas will wear as long as new parts.

The Berkeley "Conservall" fixture is designed especially for rebuilding crawler tractor track links or rails without disassembling them. The track is placed in a trough and clamped in position. A LINDE side-beam carriage



Tractor rail links rebuilt in "Conservall" machine by UNIONMELT welding. Cams automatically control welding action for each link.

moves the UNIONMELT welding equipment over the positioned track and the welding of each link is automatically started, stopped, and accurately controlled. Rollers, idlers, sheaves, and other circular work can also be welded or resurfaced on another section of the machine.

The terms "Linde," "Oxweld," and "Unionmelt" are registered trade-marks of Union Carbide and Carbon Corporation.

The "Leader" machine is also available for rebuilding both cylindrical and flat parts. Rollers are rebuilt on top of the machine. Larger parts, such as idlers, are mounted in the chuck at the side of the machine as shown. With the flat work attachment, parts such as disassembled track rail links, grousers, bulldozer blades, end bits and fabricated members can be resurfaced easily. This attachment is operated by a gear which is mounted in the chuck.



These tractor rollers and an idler were rebuilt at a speed of 30 in. per min. by UNIONMELT welding.

With both machines, the wheels can be tilted for rebuilding the flanges. It takes only 80 to 90 minutes to rebuild a D-8 track roller. Idlers take about three times as long.

OXWELD 1928 rod is normally used in making these repairs. When wear is excessive, OXWELD 296 rod is sometimes used for the initial buildup which is then finished with OXWELD 1928 rod. For such resurfacing, use either Grade 80 or Grade 90 UNIONMELT welding compositions.

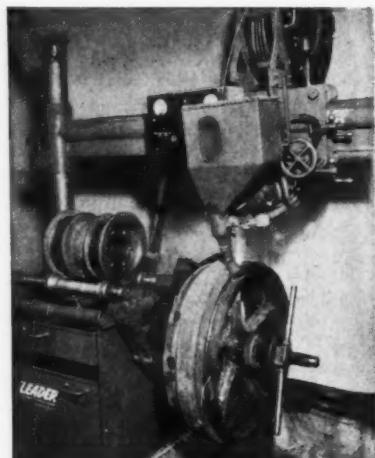
For some services, a finishing pass with a higher alloy tube rod is applied to produce a harder surface. While material of almost any hardness can be applied, one combining hardness and toughness lasts longer than one of higher hardness that tends to spall and chip. As deposited, OXWELD 1928 material has a hardness of about Rockwell C-25, but in service the working

surfaces actually develop properties which cause them to outwear deposits that are substantially harder.

## Advantages of UNIONMELT Build-up

UNIONMELT welded resurfacing is especially attractive with these automatic machines which readily permit deposit rates of 20 lbs. per hour. Savings in time and the advantages of a smooth uniform deposit justify the initial investment in automatic equipment. Important in these times is the conservation of metal realized with the process. The use of approximately *one hundred pounds of weld metal saves replacement of 2,000 to 3,000 pounds of new parts.*

LINDE's engineers and technicians will be glad to give further information about UNIONMELT welding. Telephone or write today.



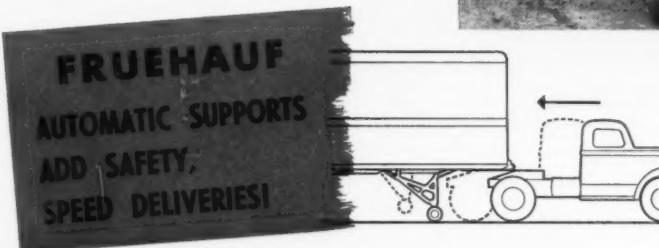
UNIONMELT welding head on "Leader" fixture rebuilds rollers and idlers. Rollers are welded on top of the machine, idlers at the side, and flat parts, depending on their size, can be welded on top of the machine or in the flat work attachment.

### LINDE AIR PRODUCTS COMPANY

A Division of Union Carbide and Carbon Corporation  
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Offices in Other Principal Cities  
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Pacific Clay Products uses Fruehaufs exclusively for all its operations. 37 Fruehauf Automatic Platforms like this one haul 15,000 tons of pipe per month to Pacific Clay Products customers throughout the state of California.



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"That

*PUNT*

certainly proves

**any assembly problem can be licked!"**

Mike continued, "What my company\* found out making football shoes can help any manufacturer get better, more economical production. I'd say that includes your refrigerators, Tom."

"How come?" said Tom.

"I never thought any screw would be just right for holding cleats to my football shoes. That's before the RB&W man came to my plant, and persuaded me to let RB&W try to develop one for me. Now I'm using RB&W screws that are ductile enough to go along with the impact, yet tough enough not to break. It just proves we should all pay closer attention to our fasteners. It really pays off!"

There's a cost-cutting lesson for you in this Rose Bowl conversation, whatever your industry. So look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using.\*\* Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W, West Coast Plant, 4466 Worth St., Los Angeles, Calif.

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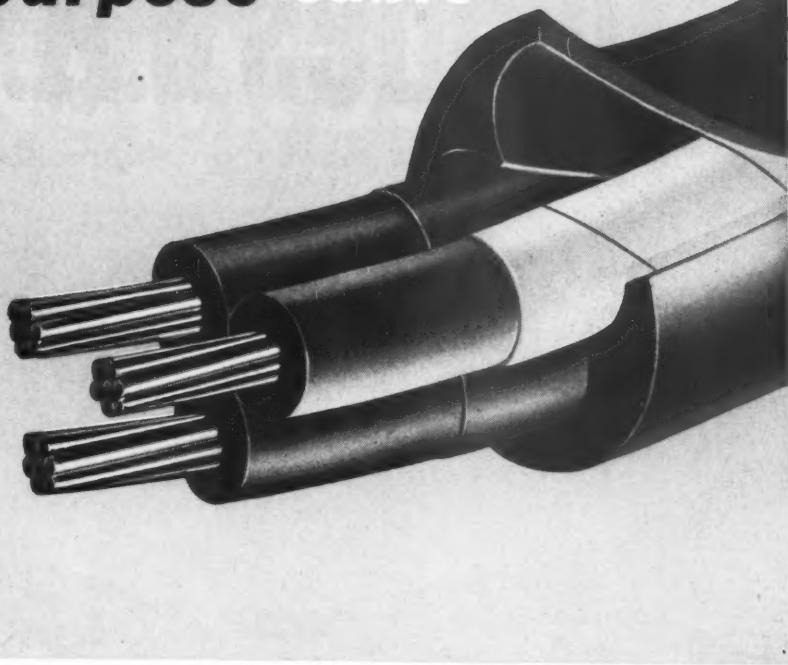
\* Brooks Shoe Manufacturing Co., Philadelphia, Pa.

\*\* New SPIN-LOCK Catalog is in the Product Design File. Write for extra copies.

# Durasheath

*the all-purpose cable*

for both  
power  
and light  
services



Durasheath's\* tough neoprene jacket stubbornly resists electrolysis, corrosion, temperature extremes, cutting, abrasion, impact, flame, oil, grease, moisture and most soil acids and alkalies.

Run it overhead, in ducts, or buried underground—or all three in one continuous run.

It's flexible, easy to handle, economical to install; made in single or multi-conductor construction.

Your nearest Anaconda Sales Office or Distributor can show you why it's good business to install this versatile, all-purpose cable.

Just ask them. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

52368

\*Trademark

**the right cable for the job**

**ANACONDA®**  
**WIRE AND CABLE**

**ANACONDA ON THE PACIFIC COAST:** Plant at: Orange, Calif. District Offices at: Los Angeles, Calif.; San Francisco, Calif.; Seattle, Wash.

# Acme Steel Strapping Insures S.A. *(Safe Arrival)*

**Saves time and money on shipments anywhere!**



**SAFE ARRIVAL ON THE ROOF OF THE WORLD.** A load of lumber held secure and safe with quickly applied bands of Acme Steel strapping is about to be dropped on high mountain pass for a new construction base—part of the Aluminum Company of Canada's Project British Columbia, world's greatest aluminum-hydroelectric development, under construction 400 miles up Canada's Pacific Coast.



**A FLEET OF 8 HELICOPTERS** makes as many as a hundred round trips a day to mountain-top base, flying meat, milk, fuel and machinery all bound with Acme Steel strapping. In six months of these mountain 'copter lifts, not a single dropped load was broken!



**ACME  
STEEL**

ACME STEEL CO.  
CHICAGO

**ACME STEEL COMPANY**

4901 Pacific Blvd., Los Angeles 58, Calif.

*Reliable*

# POWER TRANSMISSION



**PHILADELPHIA  
WORM GEAR  
SPEED REDUCERS**

For right angle drives—horizontal or vertical. Ratings to 250 h.p. Ratios 3 1/2:1 to 6300:1.

**GEARS**

All types, sizes  
and materials

**PHILADELPHIA  
HERRINGBONE  
SPEED REDUCERS**

Single, double, triple reductions. Ratios 1.75:1 to 300:1. High efficiencies.

*Literature describing these products will be sent upon request.*

# Philadelphia Gear Works, Inc.



**ERIE AVE. AND G ST., PHILADELPHIA 34, PA.**

DENVER • LOS ANGELES (HUNTINGTON PARK) • OAKLAND • PORTLAND • SEATTLE  
CALGARY • EDMONTON • VANCOUVER

**Industrial Gears and Speed Reducers  
LimiTorque Valve Controls**

# AMERICAN BLOWER AIR HANDLING PRODUCTS SERVE YOU MANY WAYS

Want to heat large areas? Is there a dust problem in your business? Want greater power plant efficiency? Read how American Blower equipment can help you.



## HEATING LARGE AREAS

Ability to place heat *where* it's wanted and in the *quantity* needed is an advantage that makes American Blower Unit Heaters ideally suited for heating such large areas as warehouses, garages and auditoriums. These dependable unit heaters force heat down to the working level, heat up quickly with little time lag. They are low in first cost, and deliver more heat per pound of material than any other known system of heating. Models available for steam or hot-water heating systems, also self-contained gas-fired models.



## DUST PROBLEM?

If you have a problem along the lines of dust and fly ash collection, American Blower will be glad to help you. We

have a wealth of experience in this field that covers not only dust and fly ash removal in industry and public utilities, but also the recovery of valuable materials from air. In addition to local, on-the-spot assistance from our branch office personnel, a modern, fully equipped dust laboratory is maintained in Detroit to serve you.



## MORE EFFICIENT POWER

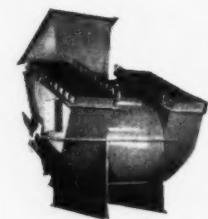
If you're faced with the need of expanding or enlarging power plant facilities, consult American Blower. You'll find our Mechanical Draft Fans help you meet the most exacting power plant requirements. High static efficiency, low RPM, low tip speed and low inlet velocity are but a few of the many reasons these fans have enjoyed such wide acceptance. Types for both forced and induced draft work.

## YOUR BUSINESS

No matter what business you're in, you can count on American Blower heating, cooling, drying, air conditioning or air handling equipment to do the job better, more economically. Phone or write our nearest branch office for data.



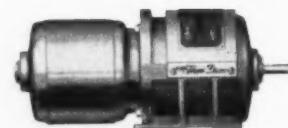
Centrifugal  
Compressors



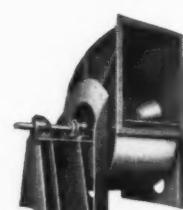
Mechanical  
Draft Fans



Dust Collectors



Gyrol Fluid  
Drives



Industrial Fans

AMERICAN BLOWER CORPORATION, DETROIT 32, MICHIGAN  
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO

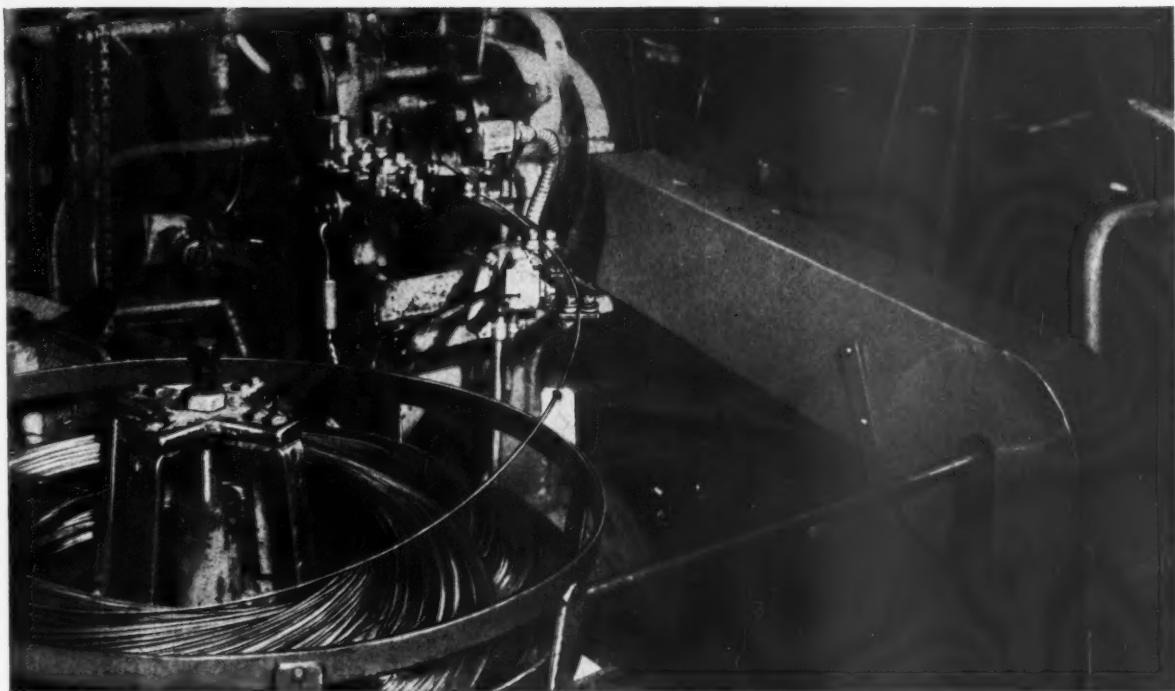
Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

YOUR BEST  
BUY

AMERICAN BLOWER

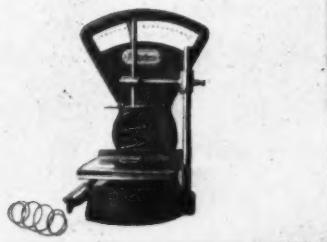
Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • ACME CABINETS • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

AIR HANDLING  
EQUIPMENT



**Forming barrel coil springs**, this machine uses more than  $\frac{1}{2}$  mile of Premier Spring Wire for each Beautyrest Mattress. The Simmons Company, San Francisco, has used wire from Columbia-Geneva in every Beautyrest made... for over 28 years!

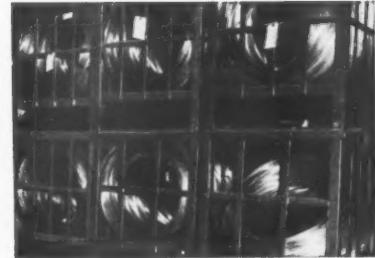
## 1/2 mile of Premier Spring Wire goes into every Beautyrest



**Testing of wire** goes on constantly at Simmons. These 15-gauge barrel coils must carry a load of  $2\frac{1}{2}$  lbs. when compressed to 5 inches. U-S-S Manufacturers Wire comes in more than 400 different types, grades, and finishes. And Columbia-Geneva also can produce tailor-made wire to meet your own specifications.



**"Racking" operation** on a Beautyrest Mattress binds cloth-covered coil springs together. These coils are just one of the many uses for U-S-S Manufacturers Wire. Columbia-Geneva, with the greatest wire-making facilities in the West, also produces wire for everything from can keys to coat hangers.



**More than 33 million feet** of Premier Spring Wire is used every year by the Western operation of the Simmons Co. All of this uniform, high-quality wire comes from the mills of Columbia-Geneva, Western producing member of the industrial family that serves the nation, United States Steel.

For any type of wire you need, rely on U-S-S Manufacturers Wire. It's production is rigidly controlled by United States Steel from raw ore to finished product. Columbia-Geneva specialists are always available to help you select the wire that's right for your job. Contact your local distributor or write to Columbia-Geneva Steel, 1403 Russ Building, San Francisco 6.

*Columbia-Geneva produces wire that's tailored to fit your needs*



### U-S-S Manufacturers Wire

*Columbia-Geneva Steel Division, United States Steel Corporation*

San Francisco • Los Angeles • Portland • Seattle • Salt Lake City

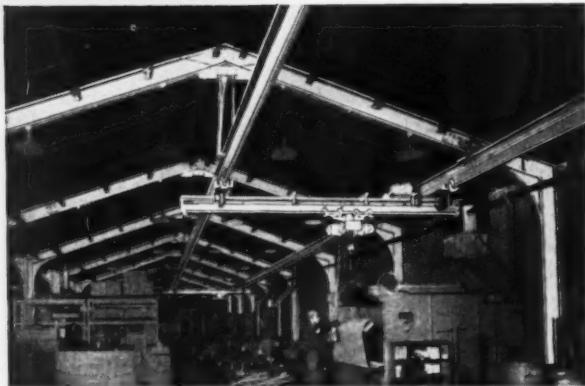
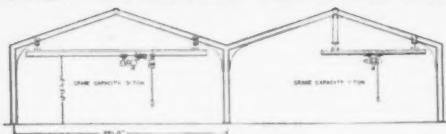
UNITED STATES STEEL



Photos courtesy of The Thew Shovel Co., Lorain, Ohio.

Rigid frame structure by The Steelcraft Mfg. Co., Rossmoyne, Ohio.

# AMERICAN MONORAIL EQUIPS RIGID FRAME BUILDINGS



*with flexible overhead crane service*

Don't let crane requirements stymie your consideration of rigid frame buildings. Packaged buildings not only provide definite savings in construction costs and erection time but can be equipped with crane service over the entire area. American MonoRail cranes up to 5-ton capacity are available for entire span or half span operation. If

you are planning plant expansion and considering rigid frame type construction, be sure to include American MonoRail cranes. Our engineers will gladly consult with you and show you cost and space saving advantages, in addition to original installation savings.

Write us today.

**THE AMERICAN MONORAIL COMPANY**

13117 ATHENS AVENUE

LOS ANGELES: American MonoRail Co.  
4645 Anaheim-Telegraph Road

CLEVELAND 7, OHIO

PACIFIC COAST DISTRIBUTORS  
SAN FRANCISCO: Robert M. Taylor Co.  
268 Market Street

SEATTLE: F. T. Crowe Co.  
325 Second Avenue



If...the average Lyon Steel Equipment Dealer dressed to represent every kind of customer he serves—he'd be wearing quite an outfit!

for Lyon makes over 1500 different items—serving hundreds of markets including factories, shops, offices, warehouses, schools, churches, hospitals, clubs, institutions and homes.\* (A very few typical Lyon Products are shown below.)

\*Facilities also available for special contract work

#### LYON METAL PRODUCTS, INCORPORATED

LOS ANGELES SAN FRANCISCO PORTLAND SEATTLE SPOKANE  
3650 Union Pacific Ave. 607 Market Street P. O. Box 3797 1755 Utah Avenue 614 Peyton Bldg.

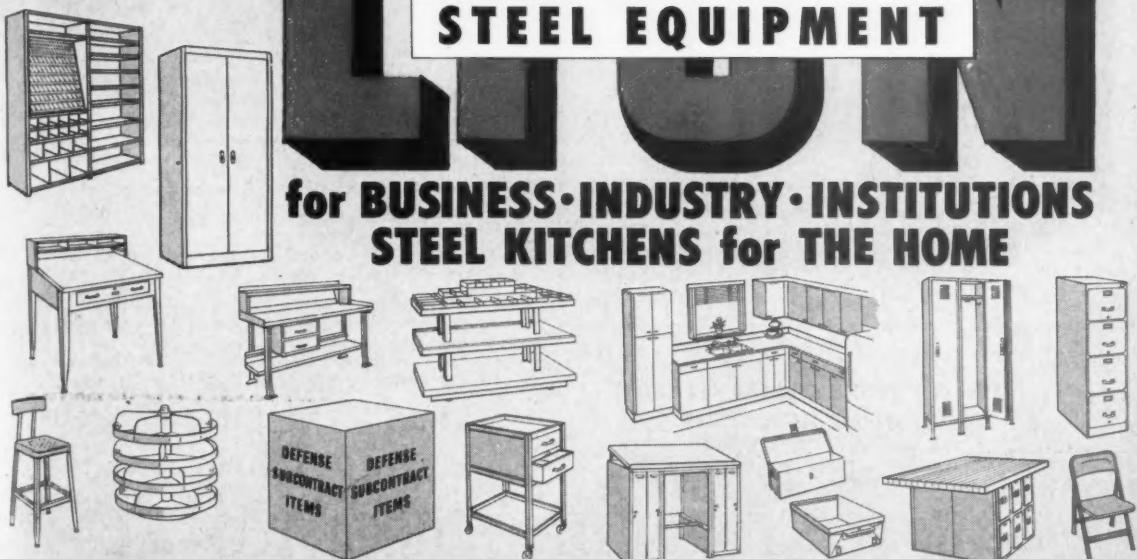
Shipment from Pacific Coast Points

General Offices and Main Factory: 240 Monroe Avenue, Aurora, Illinois

# LYON

## STEEL EQUIPMENT

for BUSINESS • INDUSTRY • INSTITUTIONS  
STEEL KITCHENS for THE HOME



#### A PARTIAL LIST OF LYON STANDARD PRODUCTS

- Shelving
- Lockers
- Stools
- Bin Units
- Kitchen Cabinets
- Cabinet Benches
- Storage Cabinets
- Drawing Tables
- Tool Totes
- Bar Racks
- Tool Boxes
- Parts Cases
- Economy Locker Racks
- New Freedom Kitchens
- Toolroom Equipment
- Wood Working Benches
- Display Equipment
- Flat Drawer Files
- Revolving Bins
- Hanging Cabinets
- Filing Cabinets
- Folding Chairs
- Work Benches
- Bench Drawers
- Service Carts
- Sorting Files
- Drawer Units
- Hopper Bins
- Tool Stands
- Shop Boxes
- Tool Trays
- Shop Desks



- ALUMINUM
- COPPER AND BRASS
- BERYLLIUM COPPER
- MAGNESIUM
- NYLON AND TEFLON
- PERFORATED METALS
- PRE-PLATED METALS
- WIRE CLOTH
- BRAZING ALLOYS



Got a tubing problem?

**CALL US** for  
**U.D.D.\* COPPER TUBING**

**SIX  
WAYS  
BETTER**

**FLARING**

Precision milling and uniform density guarantees perfect flares.

**BENDING**

U.D.D. copper tubing will readily and safely bend to radii 3 times outside diameter of tube.

**100% CLEAN**

Inside surface polished to mirror finish by special equipment. Outside surface steam-cleaned to eliminate foreign matter.

**DEHYDRATED**

Not only dehydrated but thoroughly cleaned... so clean that the inside surface is close to a gold color.

**DEPENDABLE**

Annealing: Long-period annealing guarantees uniform surface of fine-grain U.D.D. tubing.

**COILING**

Patented "Dulayer" method preserves uniform soft temper despite rough handling. U.D.D. precision refrigeration tubing reaches you in perfect condition... unwinds and straightens easily. Packed one coil per carton—available in 8 different diameters.

United copper tubing also available in types K, L, and M water tubes, and in all industrial sizes.

\*UNITED DEOXIDIZED DEHYDRATED  
UNITED WIRE & SUPPLY CORP.

The E. JORDAN BROOKES CO. Inc.

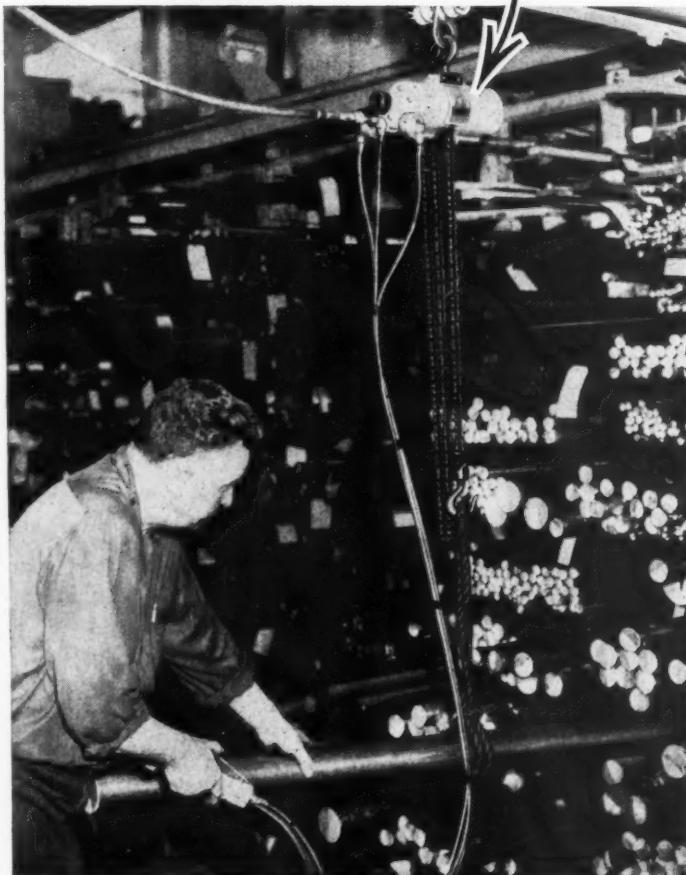
REPRESENTATIVES AND DISTRIBUTORS

5138 WEST JEFFERSON BLVD. LOS ANGELES 16, CALIFORNIA

Telephone: WEBster 1-1631



## Precision Casting



# Saves 33%



*Control fingers for an air hoist are now precision-cast in one piece. Five machining operations are eliminated.*

The control finger for this air hoist is stronger and costs one-third less now that it is a HAYNES precision investment casting. The fingers were formerly machined in two pieces and brazed together. The repeated strain of starting and reversing the hoist caused the parts to break at the brazed joint in two to six weeks. No breakage has occurred since changing over to the investment-cast parts.

Precision casting eliminates the brazing operation, because the fingers can be cast in one piece. In addition, several machining operations are no longer necessary—for a saving of 33 per cent.

For tips on designing parts to be produced by precision casting, as well as examples of successful applications, write for the booklet, "Investment Castings."

**HAYNES**  
TRADE-MARK  
*alloys*

"Haynes" is a trade-mark of Union Carbide and Carbon Corporation

**Haynes Stellite Company**  
A Division of  
Union Carbide and Carbon Corporation

UCC  
General Offices and Works, Kokomo, Indiana  
Sales Offices  
Chicago—Cleveland—Detroit—Houston  
Los Angeles—New York—San Francisco—Tulsa



# EDITORIALS

## Business Outlook: Number 1

The argument of an inevitable recession when defense spending is reduced loses some of its strength if the facts are examined. This from Dr. N. H. Engle, director of the Bureau of Business Research, University of Washington, writing in the Bureau's monthly publication *Pacific Northwest Business*.

Says Dr. Engle: Despite great fears at the close of World War II that transition to a peace-time economy would mean great unemployment and loss of national income, the adjustment was an easy one. While defense expenditures faded away from \$78.8 billion in 1945 to \$24.1 in 1946 and continued downward to \$11.2 billion in 1948, gross national production only sagged off from \$215.2 billion in 1945 to \$211.1 in 1946, and by 1948 was up to \$259 billion, well above the 1945 level. Unemployment never was a post-war threat.

While there is today no such backlog of unfilled consumer wants as existed in 1945, nor as much demand for industrial facilities, nevertheless, business and marketing research can overcome a prospective \$20 billion cut in defense spending at the end of 1953.

Dr. Engle's recommendations: (1) Make market research available to smaller companies, possibly on a cooperative basis. (2) Narrow the technological gap between existing machinery, even the best, and what can be produced. (3) Utilize management research. (Editor's note: See articles on "Big Business Practices for Small Business" and "Evaluating Management Decisions by the Learning Curve," elsewhere in this issue.) (4) Rejuvenate personal selling and advertising.

## Business Outlook: Number 2

"Growth companies," which constitute so much of the Western industrial economy, should recognize that we are one year closer to an adjustment period than a year ago; consequently, should restrict plant expansion and build up working capital. This from T. W. Johnson, vice president of the Security-First National Bank, Los Angeles, speaking before the American Management Association in that city.

Says Mr. Johnson: It is not easy when things are going good to muster up the courage to forego further investment in fixed assets in order to build liquidity. Insist that "it can be done," and do it! Otherwise, a company sailing along on easy credit is apt to become dependent on larger and more credit, and thus be vulnerable to a "trigger happy" creditor.

## "It's Amazing"

It's a pity that more writers of radio commercials and newspaper and magazine advertisements about "amazing" new discoveries couldn't have listened to what Dr. E. J. Cameron, director of the Washington laboratory of the National Canners Association, said recently in San Francisco about Nicholas Appert, the "father of canning," whose 200th anniversary was celebrated last fall.

Basically, his methods still prevail today, although far more scientifically employed. But the yearning for something new produced "supersonic" methods a few years ago, according to Dr. Cameron, and the idea seems to have been dusted off again and garbed in a new terminology suitable to the age of electronics. "Antibiotics" were another dream as a sterilizing agent a couple of years ago, and now ionizing radiations, including X-rays, cathode rays and gamma rays hold the center of interest.

It is his opinion that the Appert principle of preservation by sterilization will be used for many years to come. We say it's too bad some of these advertising writers can't realize that the truth will be popular and acceptable for at least that long.

#### SIMPLIFIES DESIGN PROBLEMS

Your devices can ring the bell every time when you can use exactly the right drive for each job.



#### HELPS MANPOWER HEADACHES

You can save man-hours because there is only one unit to buy, one unit to handle, one unit to install.



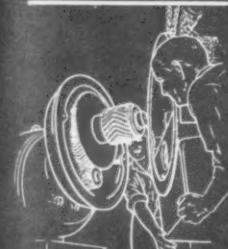
#### SAVES YOUR MONEY

Their original installed cost, the power operating cost, and the maintenance cost is less.



#### IMPROVES APPEARANCE

It's easy for you to improve the appearance and convenience of your equipment with compact, integrally built gearmotors.



#### PROVEN RELIABILITY

Their durability and stamina have been proven with millions of hours of service all over the world.



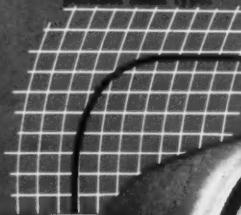
#### UNDIVIDED RESPONSIBILITY

The complete gearmotor is designed and built by one manufacturer in one plant.



#### HIGH EFFICIENCY

More efficient than other types of slow speed drives - only 2% power loss in each stage of reduction in parallel shaft type.



You get the same strength and reliability with stronger gears at no increased cost to you.



## 1/25 HP and smaller

You're free to select from an enormous range of ratings with reduction ratios ranging up to 432:1.

#### COMPACT

Integral, compact design saves space, saves money, improves appearance.



available in combinations of all these types

Flange Mounting  
Shaft Mounting  
Right Angle Gearhead  
Uni-Brake  
Shaft Mounting  
Totally Enclosed  
Revised  
Squirrel Cage



SAFE  
Fully enclosed unit eliminates danger of injury to workmen.



**MASTER**

# GEARMOTORS

can really help you!



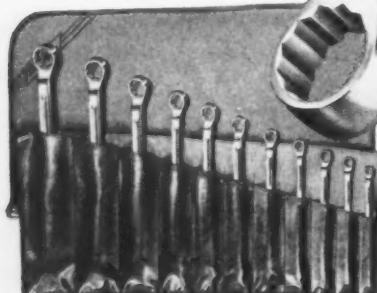
on job after job...  
YOU'LL FIND

# \* Snap-on BOXOCKETS

the handiest, safest, fastest  
wrenches you have ever used

Put speed on the job... with Snap-on Boxockets... far stronger and many times safer than open end or adjustable wrenches! Offset heads provide ample clearance in tight places. Double hexagon openings completely encircle the nut—grip securely on all six corners—cannot slip—cannot spread—and require only half the turning space where movement is limited. Each Boxocket provides two wrench sizes in each handle. Complete series covers full range of sizes,  $\frac{3}{8}$ " to  $1\frac{1}{8}$ ". Other types—Midget, Dwarf, Heavy Duty and Sledge— $\frac{3}{8}$ " to  $4\frac{1}{8}$ ". Write for Industrial Catalog and General Catalog of 4,000 Snap-on tools for production and maintenance.

XV-611-K OFFSET BOXOCKET SET—Consists of 11 wrenches, range  $\frac{3}{8}$ " to  $1\frac{1}{8}$ ", in handy kit bag. Provides 22 wrench sizes with six popular sizes duplicated.



**SNAP-ON TOOLS CORPORATION**  
8032-B 28th Ave. • Kenosha, Wisconsin

\*Snap-on is the trademark of Snap-on Tools Corporation

# LETTERS

Contributions to this column from our readers are welcome. Names will be withheld from publication if so requested. Unsigned letters, however, will be disregarded.

## Plant Location Aids

Editor, *Western Industry*:

Please permit me to compliment you on C. W. Petersen's very fine article "Avoiding Pitfalls in Plant Location," which appeared in the January issue. The article is indeed very interesting and informative.

It is our desire to have all industrial engineers familiar with the advertising and industrial development program we conduct, and also to be informed of the advantages we have to offer industrialists who are seeking plant locations. Therefore, we would like to mail them some of our printed material. Can you tell us where we can obtain a complete list of Bay Area industrial engineers?

GUILFORD W. KOCH, Mgr.  
Alameda County New Industries Committee  
Oakland Chamber of Commerce  
Oakland, Calif.

\* \* \*

## Exclusive Information

Editor, *Western Industry*:

December issue article on AEC very good. Enjoy reading and rereading your magazine.

JOHN J. FEENEY, Owner  
Bridge Machine Works  
Seattle, Wash.

\* \* \*

## In Demand

Editor, *Western Industry*:

We are most anxious to obtain five reprints of the article "Stop Watch and Standard Data," published in the August 1952 issue.

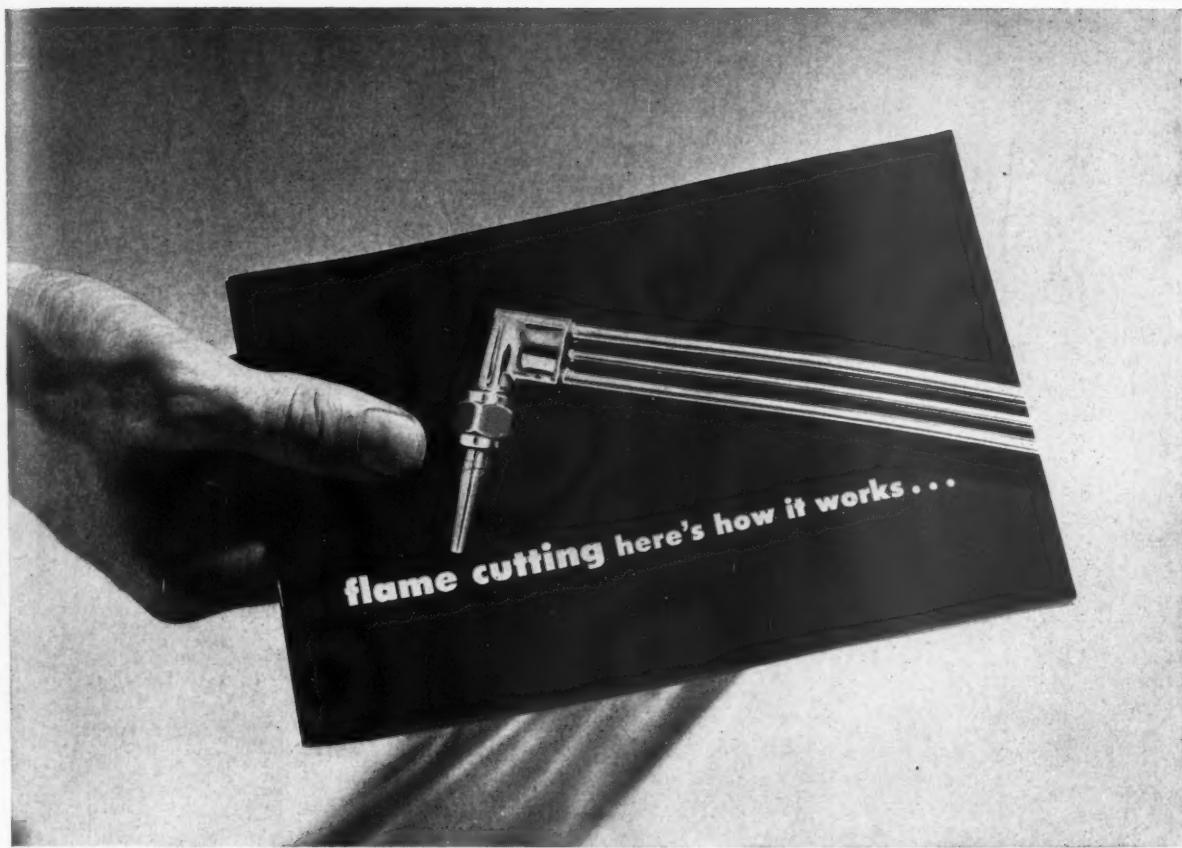
If there is a charge for these reprints, please bill us.

EDMUND SWORT  
Beckman Instruments, Inc.  
South Pasadena, California

(Tear-sheets of articles are supplied gratis to our readers as long as the supply lasts. Reprints have to be charged for, and are seldom supplied in lots of less than 100.)

MORE LETTERS ON PAGE 28

WESTERN INDUSTRY—February, 1953



## **this is a really good book, you will want a copy of it... free, while supply lasts**

This forty page brochure is packed full of important, interesting and worth-while information; 27 fine photographs illustrate the well written text. Here are some of the subjects covered:

What is flame cutting . . . why preheating flames . . . one or many preheating flames . . . how important is the oxygen jet . . . how much oxygen pressure do we need . . . does pressure dictate volume . . . which fuel gas to select . . . and full details about how a cutting torch is designed and how it functions.

There are hints on how to select a cutting tip . . . and much added data of value to the experienced operator as well as for the rank beginner. It's a good book and you will want to own a copy of it. Write today for YOUR FREE COPY.

NATIONAL WELDING EQUIPMENT CO.  
218 Fremont Street, San Francisco 5, Calif.

Please send FREE "Flame Cutting" Booklet.

Name. \_\_\_\_\_ Title. \_\_\_\_\_

Company. \_\_\_\_\_

Address. \_\_\_\_\_

City. \_\_\_\_\_ Zone. \_\_\_\_\_ State. \_\_\_\_\_

(Please print to make sure you receive your copy.)

Made by

*National*  
SINCE 1910

WELDING EQUIPMENT CO., San Francisco 5, California

525



## How AMERICAN Chain Simplified Flow of Material

• Valves had to be moved from the testing department on the second floor to the ground level. A conveyor system could move the material but attachment of widely different sizes and shapes of valves slowed up the job.

The AMERICAN CHAIN man suggested 150 lengths of  $\frac{1}{4}$ " steel loading chain with No. 42 ACCO grab hooks. This light, strong, highly flexible chain permits looping through the handle, around a flange, or even through open parts of the valve. Now in a matter of seconds, any valve is securely fastened for the trip down to the lower level.

Here is a simple, effective use of chain which saved money. Perhaps you have a similar problem, or a use for one of hundreds of welded or weldless chains made by AMERICAN. Whatever your chain need, bring your problem to AMERICAN which makes America's most complete chain line.

Your AMERICAN CHAIN distributor stocks many styles and sizes, and can get any others for you. He knows chain. He can save you money. Call him today.

**ACCO**

SAN FRANCISCO OFFICE, 695 Bryant Street  
DENVER OFFICE, 2125 Blake Street



AMERICAN CHAIN DIVISION  
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles,  
New York, Philadelphia, Pittsburgh, Portland,  
San Francisco, Bridgeport, Conn.

**American  
Chain**

## LETTERS

CONTINUED FROM PAGE 26

### Ask "Ike" To Do It

Editor, *Western Industry*:

It seems compelling to drop you a note of congratulations on the January issue of *Western Industry*.

This was surely a great issue of a consistently fine industrial publication. You and your staff are certainly to be commended, and I am sure that many in the West will express my same feelings about this issue.

One very special little feature happened to hit very close to my heart and that was your commentary entitled "Mental Metric System," under Editorials. I do wish that a full-scale tornado crusade could be launched on adaptation of the metric system for the United States. I know it is a king-sized job but some day somebody is going to have the guts and drive to put it over.

If there is ever anything that we, at Lear, can do for you, let us know; we think you are great.

GEORGE OTIS  
Vice Pres., General Mgr.  
LearCal Div., Lear, Inc.  
Los Angeles, Calif.

\* \* \*

### "Learning Curve" Appreciated

Editor, *Western Industry*:

Will you kindly send me tearsheets of the series of articles by Glen E. Ghormley, "The Learning Curve"? Also, the article "Power Transmission" by Robert Bern, December 1952 issue.

These seem to be something we can all use to advantage, and judging by the requests, there are others who agree that you are printing very worthwhile articles.

ROBERT K. ADAMS  
Metallurgical Department  
Aluminum Co. of America  
Vancouver, Washington

\* \* \*

Editor, *Western Industry*:

Your courtesy and promptness in providing tearsheets of two articles by Glen Ghormley on the Learning Curve are certainly appreciated.

Have also enjoyed reading the December number of *Western Industry*, and look forward to seeing succeeding issues.

DUNCAN GREGG, Gen. Mgr.  
Richmond Machining Div.,  
Kaiser Manufacturing Corp.  
Richmond, California



## ***It's not what you pay - it's what it costs***

There probably isn't a thing you buy that you couldn't buy cheaper. Provided, that is, you didn't figure the real cost—provided you weren't concerned with getting your money's worth. Right?

But you are concerned. You buy for longer wear. You buy for freedom from trouble. You buy for fewer repairs . . . for more dependable service. You buy equipment to be worked—not to be laid up. You know that thrifty buying isn't merely price-tag buying.

And it's to you, the thrifty buyer, that we like to sell Crane piping equipment. Whether it's a high pressure, high alloy valve or a ½" malleable pipe fitting, every unit in the Crane line is built to last longer with fewer repairs and lower servicing costs. That's why year in and year out thrifty buyers have put more Crane Valves in service than any other make.

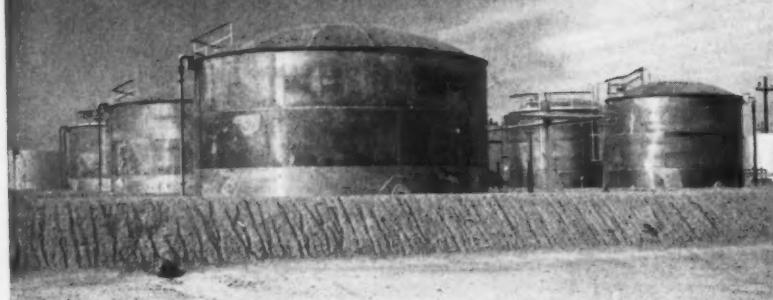
Crane Co., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois. Branches and Wholesalers Serving All Industrial Areas.



# CRANE

**VALVES • FITTINGS • PIPE • PLUMBING • HEATING**

# HORTON ALUMINUM TANKS



## Storing Acetic and Propionic Acids at Large Chemical Plant

The five Horton\* aluminum tanks shown above are used to store acetic and propionic acids at a large chemical plant. Both acids are synthetic chemicals produced during the manufacture of liquid hydrocarbons from natural gas. Products for the plastics, surface coating, food and pharmaceutical industries are made from the propionic acid. The acetic acid is used in the manufacture of cellulose waters for plastics, films, lacquers and yarns.

Our experienced engineers, shops and field crews have designed, fabricated and erected aluminum and stainless steel tanks for all types of industries. Years of experience enable us to tackle tank construction problems with complete confidence. The next time you plan use of corrosion-resistant materials, write our nearest office for information or quotations.

\*Trade Mark Registered in U. S. Patent Office.

Above: Three 120,000-gal. acetic acid tanks and two 50,000-gal. propionic acid tanks made of aluminum.

Right: Two 23-ft. diam. by 18-ft. diam. Horton aluminum tanks storing propionic acids at a chemical plant.



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Havana.....	402 Abreu Building	Tulsa 3.....	1667 Hunt Building

Plants in: BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

## CALENDAR OF MEETINGS

FEB. 22-26—*National Sand and Gravel Association and National Ready Mixed Concrete Association*, national exhibits in San Francisco. Contact Vincent P. Ahearn, Executive Secretary, 1325 E St., N.W., Washington 4, D.C.

MARCH 5-6—*Western Candy Exposition* in conjunction with conference of candy manufacturers and allied industries from the eleven Western states, Hotel Statler, Los Angeles. Contact conference headquarters, 1366 E. Seventh St., Los Angeles.

MARCH 6-7—*Western States Power Show*, Hollywood, Hollywood Roosevelt Hotel. Sponsored by *California State Association of Power Engineers, Inc.* Contact Ernest M. Dixon, Engineers Hall, 1438 Oak St., Los Angeles 13.

MARCH 9-13—*Mayflower Warehousemen's Assn.*, national convention in San Francisco. Contact Mr. O. V. Merrill, Merrill Transfer & Storage Co., 424 Ninth St., San Francisco.

MARCH 15-19—*National Association of Refrigerated Warehouses and The Refrigeration Research Foundation* training conference at San Jose, Calif.

MARCH 15-20—*American Chemical Society*, national convention in Los Angeles. Contact William G. Batt, Franklin Institute, Newark, Del.

MARCH 18-20—*Second Electrical Maintenance Conference*, at Rodger Young Auditorium in Los Angeles. Contact L. J. Rejda, Westinghouse Electric Corp., chairman of conference.

MARCH 23-24—*Canners League of California* 49th Annual Directors Conference at Santa Barbara Biltmore Hotel, Santa Barbara. Contact M. A. Clevenger, 64 Pine St., San Francisco, GA 1-3791.

MARCH 23-25—*Intermountain Logging Conference* at Davenport Hotel, Spokane, Wash. Contact Charles Keim, Kalispell, Wash.

MARCH 23-27—*Western Metals Congress and Show*, Pan-Pacific Auditorium, Los Angeles. Contact W. H. Eisenman, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio.

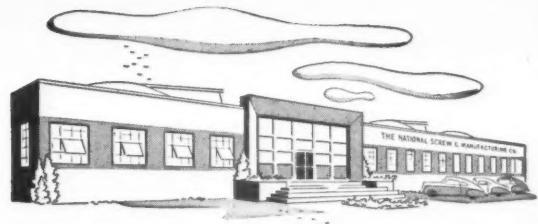
MARCH 26—*Portland Cement Assn.*, regional safety conference, at Davenport Hotel, Spokane, Wash.

APRIL 8-10—*The Society of the Plastics Industry, Inc.*, SPI Pacific Coast Section Conference, Last Frontier Hotel, Las Vegas, Nev.

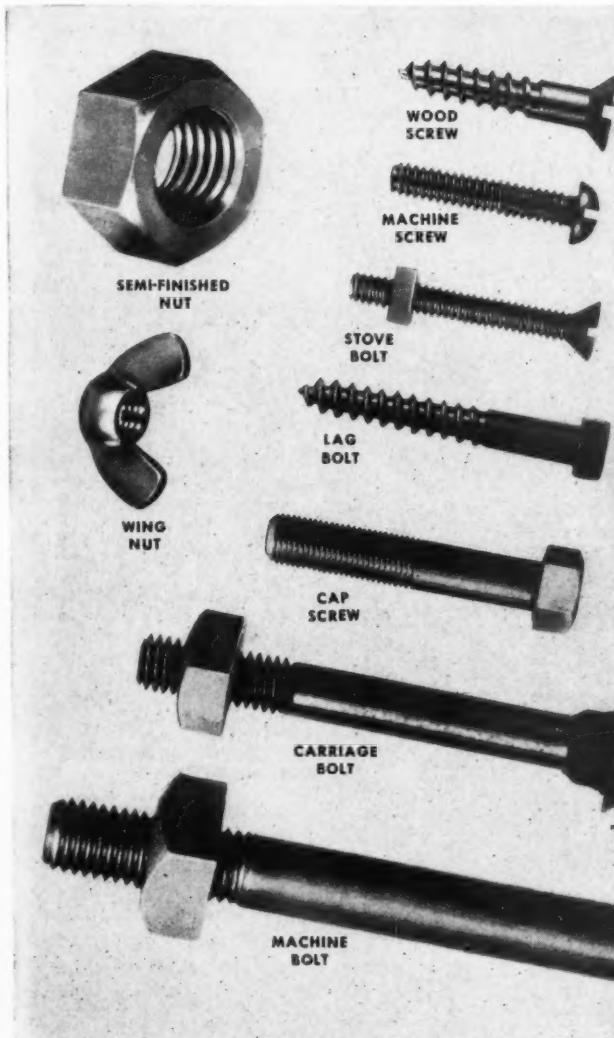
APRIL 9-12—*Oil Heat Institute*, Pacific Coast convention, Davenport Hotel, Spokane. Exposition in 161st Infantry Armory. Contact Robt. G. Elmslie, 305 Lloyd Bldg., Seattle.

CONTINUED ON PAGE 32

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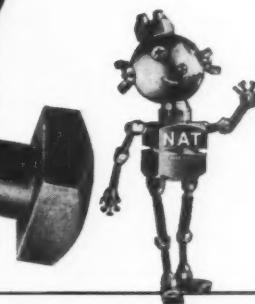


What kind of fasteners do you need? "National" produces a complete line of standard fasteners right here on the West Coast . . . and can make special fasteners of all kinds.

The most modern production equipment . . . plus strict quality control . . . plus expert workmanship . . . are your assurance of top-quality fasteners, for which "National" has been known more than 60 years.

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FASTENERS



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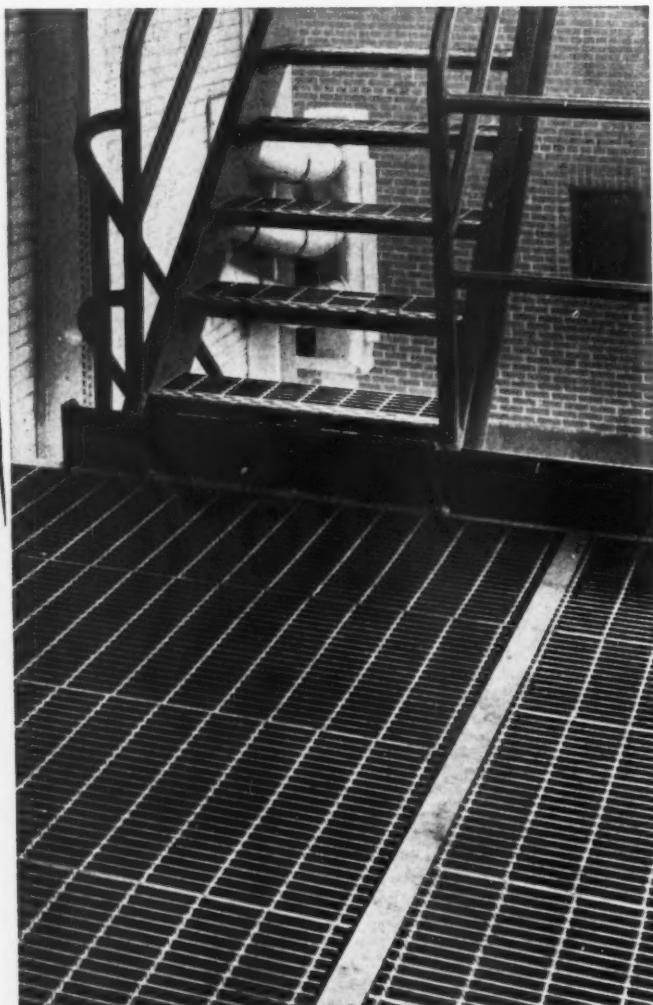


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Los Angeles 5, Calif.

J. M. Moore  
903 U. S. National Bank Bldg.  
Denver, Colorado

## CALENDAR OF MEETINGS

CONTINUED FROM PAGE 30

APRIL 9-10—*Western Cotton Shippers Assn.*, regional convention in San Francisco. Contact Mr. T. J. Harvey, Executive Vice President and Secretary, 108 E. Fourth St., Los Angeles.

APRIL 19-24—*National Industrial Health Conference*, Los Angeles.

APRIL 21-22—*Pacific Coast Management Conference*, at the Claremont Hotel, Berkeley, Calif. Contact California Personnel Management Assn., 2180 Milvia St., Berkeley 4, for additional information.

APRIL 24—*American Water Works Assn. California Section*, spring regional conference, Deep Well Ranch Hotel, Palm Springs.

APRIL 29-MAY 1—*Electronics Components Symposium*, at the Shakespeare Club, Pasadena, Calif. Contact Dr. A. M. Zarem, Chairman of Executive Committee, Suite 1011, 621 S. Hope St., Los Angeles 17.

MAY 4-7—*Northwest Electric Light and Power*, regional meeting at Davenport Hotel, Spokane, Wash. Contact Carl A. Hoffman, Spokane, MA 5115.

AUG. 17-22—*Institute of Radio Engineers Manufacturers Assn.* and *West Coast Electronics*, regional conference and exhibit in San Francisco. Contact Mr. Heckert Parker, exhibit manager, 1980 Jefferson St., San Francisco.

SEPT. 13-16—*American Institute of Chemical Engineers*, national convention in San Francisco. Contact George Gester, P. O. Box 1627, Richmond, Calif.

OCT. 20-22—*Pacific Coast Management Conference*, at the Claremont Hotel, Berkeley, Calif. For further information contact California Personnel Management Assn., 2180 Milvia St., Berkeley 4.

DEC. 1-2—*Northwest Mining Assn.*, regional meeting in Spokane, Wash. Contact E. C. Stephens, Peyton Bldg., Spokane 4.

MAY 17-19—*Pacific Northwest Trade Association*, meeting at Hotel Winthrop, Tacoma, Wash.

MAY 18 (tentative date)—*ASME Boiler Code Committee* and *National Board of Pressure Inspectors*, a joint meeting, Portland, Ore.

JUNE 28-JULY 1—*Rocky Mountain Coal Mining Institute*, Hotel Colorado, Glenwood Springs, Colo.

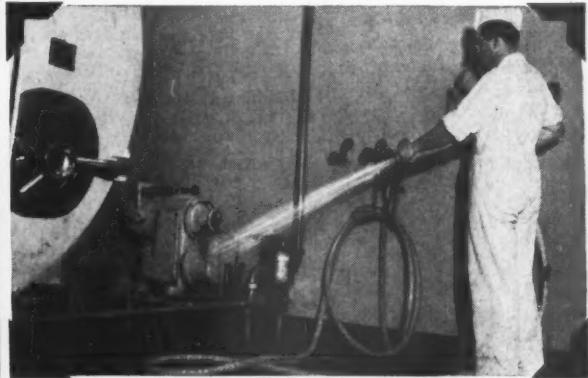
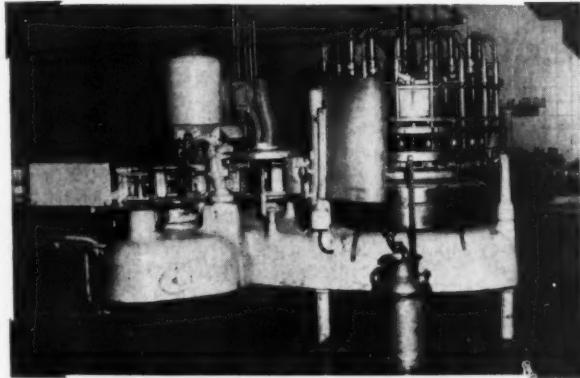
AUG. 2-9—*Western Conference on Apprenticeship*, Balboa Park, San Diego. Contact Joseph H. Stephenson, Supervisor, Trade and Technical Trades, San Diego Vocational School, San Diego.

AUG. 19-21—*Western Electronic Show & Convention* at Civic Auditorium, San Francisco. Contact Frank Haylock, 58 W. Popular St., San Mateo, Calif.

# STANDARD ENGINEER'S REPORT

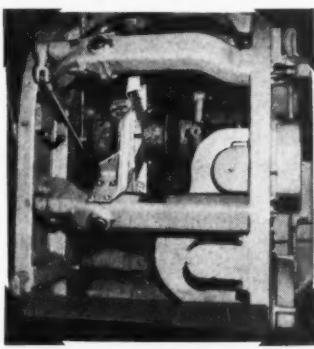
LUBRICANT	Calol SA Grease
UNIT	Plain bearings
LUBRICATOR	Grease gun
CONDITIONS	Hot water, steam, chemicals used to clean machines
PERIOD	2 years
FIRM	Challenge Cream & Butter Assoc., Berkeley, Calif.

## Special grease resists hot water where others failed!



CALOL SA GREASE is the only economically practical lubricant found by the Challenge Cream & Butter Assoc., Berkeley, Calif., that will stay on plain bearings during daily washings with chemicals, hot water, and steam. Other lubricants tried, failed

PLAIN BEARINGS on all plant machinery are lubricated daily with Calol SA Grease, but only small quantities have to be added. "Calol SA Grease gives us the best lubrication we've ever had," says H. L. Francis, chief engineer. "It's the only grease I've found at reasonable cost that resists chemicals, hot water, and steam."



REMARKS: Calol SA Grease has a wide range of uses. It is especially valuable for anti-friction and plain bearings operating in air temperatures above 200°F.

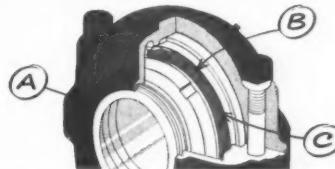
FREE CATALOG: "How to Save Money on Equipment Operation," a new booklet full of valuable information, is ready for you. Write or ask for your free copy today.



TRADEMARK "CALOL" REG. U.S. PAT. OFF.

to withstand the heat and washing action, and had to be completely replaced each day. For two years Calol SA Grease has been used exclusively on all plain bearings in the plant, including those on the filling machine at left and pump above.

### How to reduce wear in all types grease-lubricated machine bearings



Specialized CALOL SA Grease will provide constant lubrication in high ambient and bearing temperatures—proved in mill ambient temperatures of 250°F. and Navy Ball Bearing Machine tests of 10,000 rpm and extreme temperatures.

- A. Made from sodium-aluminum base...very high melting point minimizes seepage.
- B. Feeds evenly to all bearing surfaces.
- C. Remains soft in cold temperatures.

STANDARD TECHNICAL SERVICE checked this product performance. For expert help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative; or write Standard Oil Company of California, 225 Bush St., San Francisco.

STANDARD OIL COMPANY OF CALIFORNIA

# A regular "busybody"

## AROUND YOUR PLANT

### Allis-Chalmers

#### HD-5G

1 and 2 cu. yd. buckets. 40 drawbar hp. Dumping Height — 9 ft. 1/4 in. — other models with buckets to 7 cu. yd. and up to 175 net engine hp.



Interchangeable attachments for the HD-5G include: Special buckets — up to 2 yd. . . Lift Fork (below) for handling palletized loads . . . Crane Hooks for heavy lifting . . . Bulldozers for any excavating . . . Trench Hoe for footings, pipe, after trenching

## ALLIS-CHALMERS

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Find out how Allis-Chalmers Tractor and Tracto-Shovels can improve material handling around your plant — send coupon for information or demonstration.

ALLIS-CHALMERS TRACTOR DIV., Dept. WI  
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I'm interested in:  receiving literature on Allis-Chalmers Tractors and Tracto-Shovels.  
 seeing this equipment working.

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City ....., State .....

# THIS MONTH'S COVER

## Tapping the West's best basic raw material

BEST raw material for any industry is applied brain power—and this is particularly true in the petroleum field. Here, raw materials are well known; it's the diversification and utilization of the products that counts.

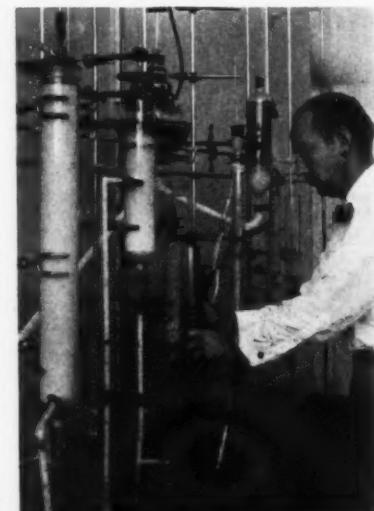
This month's cover shows a gasoline researcher at the new \$8,000,000 industrial research center of Union Oil Co. of Calif. at Brea, Calif. What you don't see are the many other activities in this modern Western laboratory—production research, process development, engineering and economics.

And the products being investigated are of importance to almost every Western industry—lubricants, greases, asphalts, waxes, jet fuels, sulfates, etc.



LAB EXTERIOR—clean-cut Western look.

JET FUEL refining process test set-up.



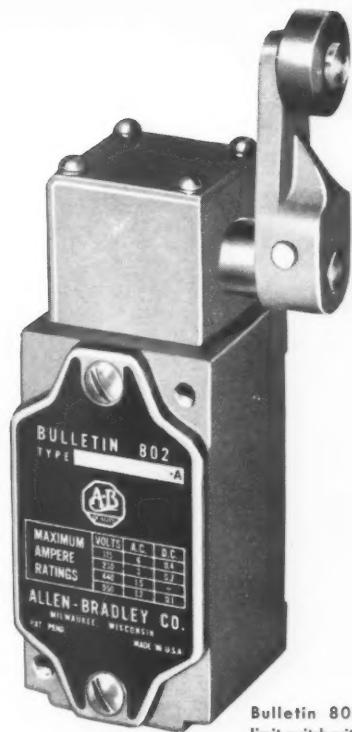
# New OILTIGHT LIMIT SWITCHES

Here is a new line of remarkably compact Allen-Bradley limit switches... streamlined for fine appearance and built for millions of failure-free operations.

The operating heads of these limit switches may be attached to the switch body in four definite locations, each 90 degrees apart. A large selection of pushrods, lever arms, and other actuating mechanisms is available.

The name plate cover has a synthetic rubber gasket to exclude oil. Terminals are easily accessible by removing the cover plate. The body is threaded for  $\frac{1}{2}$ " conduit. The switch mechanism is snap-acting, with one single pole normally open and one single pole normally closed contact, electrically separated.

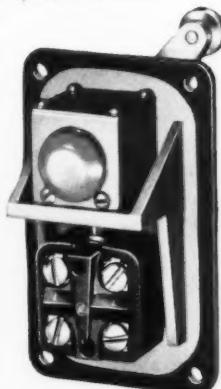
The new Bulletin 802 limit switches are designed for machine tool applications. For further information send for a copy of Allen-Bradley Bulletin 802.



Bulletin 802  
limit switch with  
roller lever



Roller lever type (Front View) for cavity mounting in machine frames



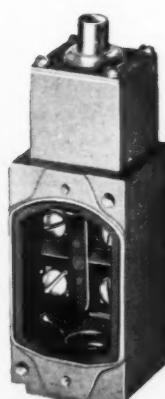
Roller lever type (Rear View) showing terminals for n.o. & n.c. contacts



Allen-Bradley Co.  
1316 S. Second St., Milwaukee 4, Wisconsin



Pushrod limit switch with roller for vertical motion of the pushrod



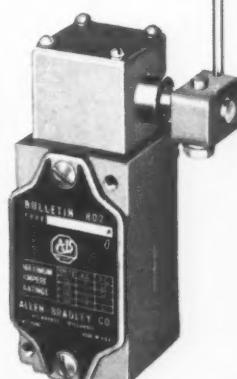
Pushrod limit switch without roller—cover off to show terminals



Pushrod limit switch designed for horizontal motion of the pushrod



Pushrod limit switch with side pushrod and maintained contacts



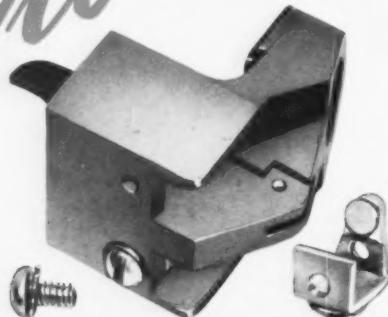
Lever operated limit switch with a long and flexible operating rod

*Extra!*

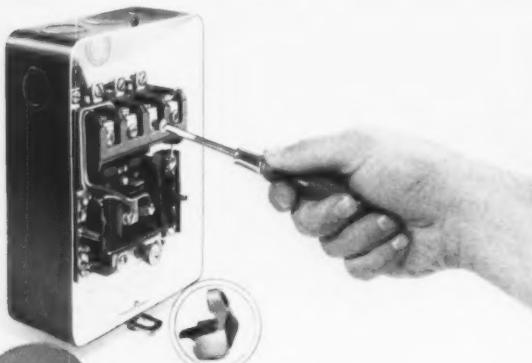
## Handy Auxiliary Contacts

for all Allen-Bradley

Sizes 0 and 1 Solenoid Controls

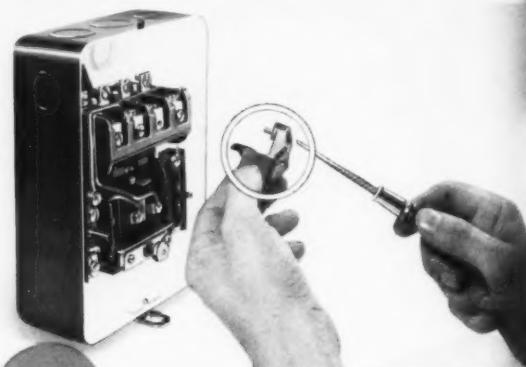


Contact may be reversed  
by removing one screw



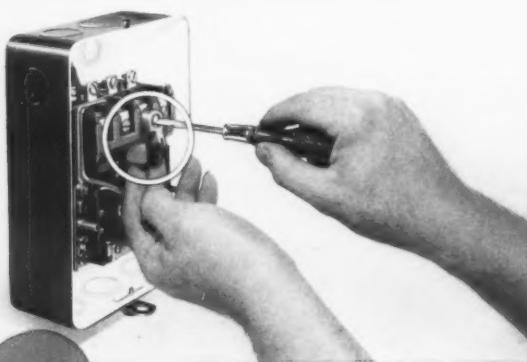
First

Remove the terminal screw from the stationary contact block of the Allen-Bradley starter.



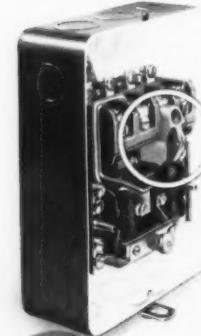
Second

Insert terminal screw into mounting hole of auxiliary contact to be attached to starter.



Then

Screw terminal screw into stationary contact block and fasten auxiliary contact to starter.



Auxiliary Contacts  
easily changed from  
n.o. to n.c. operation

The new Allen-Bradley auxiliary contact may be instantly changed from n.o. to n.c. contacts. Removal of one screw permits the instant reversal of the contacts in the contact block. There are no small parts to lose.

Ready  
to  
Wire

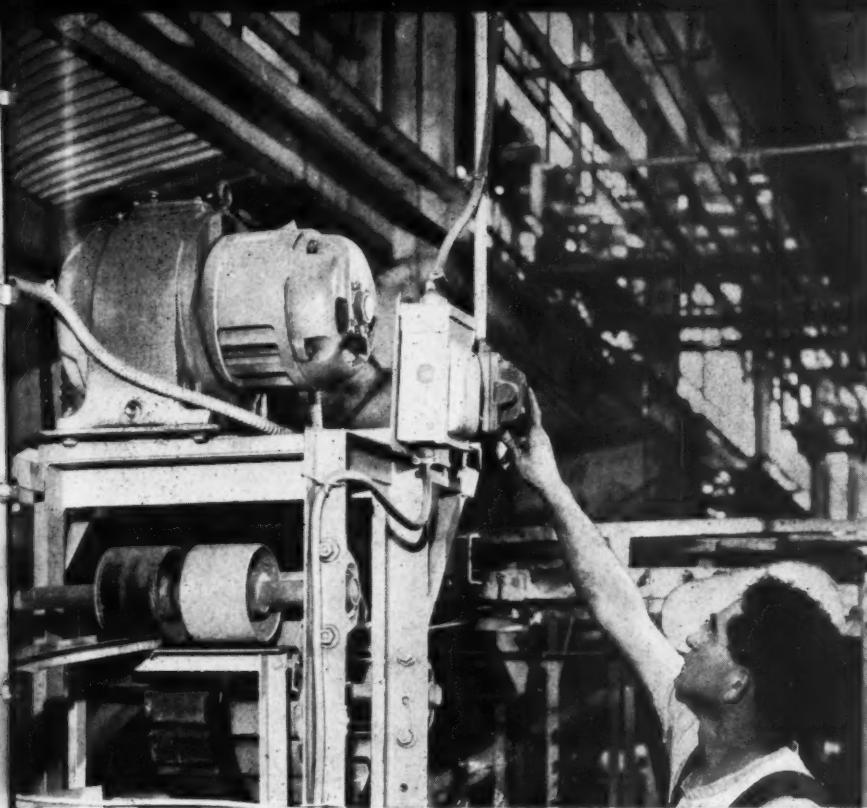
Allen-Bradley auxiliary contact is now ready to be wired for any auxiliary pilot circuit.

These auxiliary contacts are available for all Allen-Bradley sizes 0 and 1 controls, including contactors, reversing switches, combination starters, Bulletin 709 solenoid starters, and Bulletin 609 manual starters.

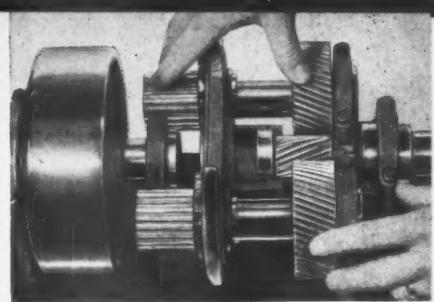
Allen-Bradley Co., 1316 S. Second St.  
Milwaukee 4, Wisconsin

1-53-MR

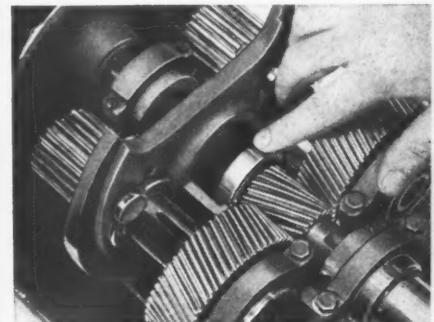
**ALLEN-BRADLEY**  
QUALITY  
**SOLENOID CONTROLS**



BERCUT RICHARDS DRIVES CONVEYORS WITH G-E PACIFIC GEAR-MOTORS BECAUSE . . .



DUAL COUNTERSHAFT DRIVE divides the load at the high-speed pinion to relieve gear tooth pressures, reduce gear wear.



TWO PINION BEARINGS prevent wobbling and excess vibration of the high-speed pinion, help assure maximum life.

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G-E Pacific Gear-motors were a logical choice for low-speed drives in Bercut Richards' fruit-canning plant at Sacramento, Cal. Like many other Western plants, they knew that G-E Pacific Gear-motors were designed to last. They knew that in each gear, bearing, casting, shaft, and belt—in every detail of design—stresses had been carefully analyzed to be sure they were more than rugged enough to stand hard service.

You can buy G-E Pacific Gear-motors with complete confidence that they are engineered for the toughest jobs in industry. They have other big advantages, too:

**INSTALLATION IS EASY.** G-E Pacific Gear-motors are single units—compact and efficient low-speed drives—

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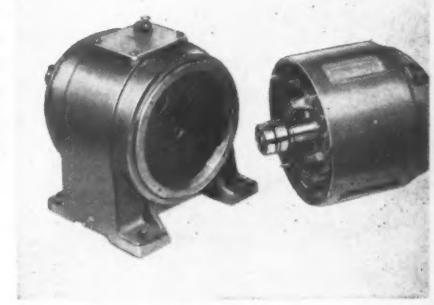
as easy to install as any standard-speed motor.

**MINIMUM MAINTENANCE** is required with G-E Pacific Gear-motors. You need only check the oil level and occasionally refill the oil reservoir.

**TRI-CLAD\*** MOTORS are built into every G-E Pacific Gear-motor. These are the same motors that have gained such wide industry acceptance—that give you extra protection against physical damage, electrical breakdown, and operating wear and tear. For more information, write for Bulletin GEA-5787 to Section 756-3, General Electric Company, Schenectady 5, N. Y. Place your order through your nearest G-E Apparatus Sales Office or your Authorized G-E Agent or Distributor.



OIL-LEVEL INDICATOR provides the easiest and quickest means of checking your lubricant, reduces maintenance time.



**SIMPLE CONSTRUCTION** makes it easy to remove the motor from the gear housing, and without disturbing the gear train.

GENERAL  ELECTRIC

With factories in Anaheim, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.



Cold water strikes red hot metal in end-quench hardenability test—first step in Ryerson quality control.

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There is no question about it—our end-quench hardenability tests certainly simplify your job of buying and heat treating today's interim and lean alloys. With the hardenability of your particular steel thus definitely determined, the other mechanical properties can also be predicted—with confidence.

These hardenability tests are but one step in a unique program that makes Ryerson alloys easier to buy and safer to use. Starting with careful selection of every heat carried in Ryerson stock, the plan follows clear through to the certification of analysis and hardenability that is sent with every shipment of as-rolled or annealed Ryerson alloy steel.

Now more than ever this Certified Plan makes Ryerson your best source for alloys. Though defense

demands are taxing even our extensive facilities we can undoubtedly take care of most of your requirements. So for quick shipment of pre-tested alloy steels which you can buy and heat treat with confidence, call the nearest Ryerson plant. And remember we also carry heat treated alloys in stock for immediate shipment.

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**CARBON STEEL BARS**—Hot rolled & cold finished

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**STAINLESS**—Allegheny bars, plates, sheets, tubes, etc.

**TOOL STEEL**—Oil and water-hardening types, ground flat stock

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# RYERSON STEEL

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SAN FRANCISCO PLANT: Box 188, Emeryville. Plant: 65th & Hollis Sts. Phones: Olympic 3-2933, ENterprise 10176.

SEATTLE STEEL PLANT: Box 3268, Seattle 14, Wash. Plant: 1200 - 4th Ave., South. Phone: Seneca 2300.

SPOKANE (INLAND EMPIRE STEEL) PLANT: Box 2158, Spokane 10, Wash. Plant: North 207 Freya St., Spokane, Wash. Phone: Keystone 9311.

# NO BUSINESS IS TOO SMALL FOR BIG BUSINESS METHODS

*Your competition is not against size,  
but against more systematic methods*

By MILTON H. and JEAN MATER

**A**MONG THE NUMEROUS special problems faced by the small manufacturer and the jobbing shop is the necessity for using big business methods on a small business pocketbook. As the West, as a whole, has relatively more small factories than the rest of the country, this is a regional as well as an individual problem.

Many small businessmen do not see their problem in these terms, of course. They regard themselves, rather, as small Davids struggling against well-equipped Goliaths for the conquest of orders and contracts. But analysis of the small manufacturer's situation clearly indicates that what he is competing against is not "bigness" but the excellent business practises big business can afford to follow.

To equalize his competitive position, therefore, the small manufacturer needs not to grow bigger but to practise big business methods—a difficult assignment, one whose magnitude has driven many small businessmen into early ulcers or bankruptcy. Difficult because he must learn, first, what big business practises he should follow, and secondly, how to stretch his budget to include these practises. The first lesson requires study, the second, daring ingenuity.

Many small manufacturers enter business with a thorough knowledge of the product they are making, and the industry or consumers they are serving. A machinist may have acquired considerable knowledge of machinery for the petroleum industry. He decides to manufacture these machines. Now he is a businessman. He knows his product and his industry, but what does he know about cost accounting, inventory control, advertising, sales management, credit and collections, and other fields of business practise?

The problem would be simple indeed if he could hire experts in every field of business practise and act himself as

coordinator of their efforts. But specialists are not always readily available, particularly in smaller towns, and even when they are, the small manufacturer can rarely afford their services.

The problem is a complex one.

#### Small manufacturer's dilemma

*Take the case of John Jones, who forgot that a one-man show is likely to find the rug suddenly jerked out from under it.*

A case history explains the small manufacturer's dilemma. John Jones, proprietor of Jones Manufacturing Co., employs 30 men to build specialized equipment for the mining industry. Jones, an engineer, knows machinery; he knows mining. He has had enough orders to keep his plant humming these past few years. Yet Jones suspects he isn't making as much profit as he should. He suspects there is a good deal of waste motion in his plant. He feels he should be doing something about steady his orders.

Moreover, he is haunted by the fact that his business tends to be a one-man show, rather than an organization. He is not only the head and the heart of the plant, which is the proper function of management, but the legs and arms as well.

Jones has picked up bits of information about inventory control, cost accounting and other business practises his larger competitors take for granted. On investigation, however, he finds that a man to do cost accounting rates at

## They practice what they preach



Small sawmill machinery people establish their operations on basis of good business methods from the outset.

MILTON H. MATER, managing owner of Mater Machine Works, Corvallis, Oregon, is a graduate mechanical engineer who did a stint as design engineer for R. Hoe and Co. before World War II called him into service as an army captain. After the war, a decision to go into business for himself brought him to Corvallis where he bought a machine shop engaged primarily in repairing sawmill machinery. Within a few months the Mater Machine Works turned its efforts from repair of old machines to manufacturing new sawmill machinery, featuring modern designs, labor-saving devices and low maintenance.

Mrs. Mater did technical public relations for a large eastern advertising agency and worked as research chemist for the Bell Telephone Laboratories before coming West. She now assists her husband as advertising and sales manager. This article is a result of the Maters' extensive study of big business and small business practise and their own experiences in developing their small manufacturing plant.

least \$400 to \$500 a month; a stockroom is an investment; inventory control requires more bookkeeping; and a sales organization runs into money and time.

He concludes that these business practises, desirable as they may be, are too expensive for his small operation. He concludes that he'll be better off running his business "by guess and by gosh" than by increasing his overhead expenses and narrowing his margin of profit.

But when a competitor, who has kept 20 to 50 men busy for years and has been apparently a great success, suddenly fails and it is revealed that he has lost \$40,000 the past year, Jones is shocked into improving his business practises. (The competitor has paid unusually high wages to his men, claiming that he would rather pay more to the men in the shop than hire non-productive accountants and salesmen.)

Jones' problem now is to adapt these silver-plate methods to his shoestring.

Jones now feels his way, realizing that cost accounting, inventory control and other controls will raise his overhead figures, trying to achieve maximum results with minimum costs.

### Cost accounting

**Tough job to set system up, requiring an expert accountant, but after that your bookkeeper or office man can handle it.**

Cost accounting is essential for any manufacturer, no matter how large or small.

Not too many years ago, the small manufacturer could make do with the simplest of bookkeeping. Today every business requires the services of an expert accountant.

From the detailed accounting records required nowadays by pay-as-you-go, social security, health insurance, etc., to cost accounting is a relatively simple step, though many businesses apparently fail to take it. A study of business failures made in one state showed that almost half didn't know their costs.

Setting up a cost accounting system is not as difficult for the small manufacturer as might be expected, since many approximations may be used.

A cost accounting system should show the manufacturer not only how much each produced item has cost, but

whether his selling prices are correct, how much individual operations cost, how to estimate jobs, and even how to reduce production costs.

Essentially, cost accounting boils down to accurate knowledge of labor costs, material costs—including freight, handling, stocking, etc.—and overhead. Setting up a cost accounting system tailor-made for a particular plant is a job for an expert accountant, with constant consultation with management. But once the system is set up, a bookkeeper can keep the records. In a small plant, cost accounting can be one of the responsibilities of the bookkeeper or office man.

It is up to management, however, to initiate cost records, keep them practical, and to make intelligent use of them as a tool of business.

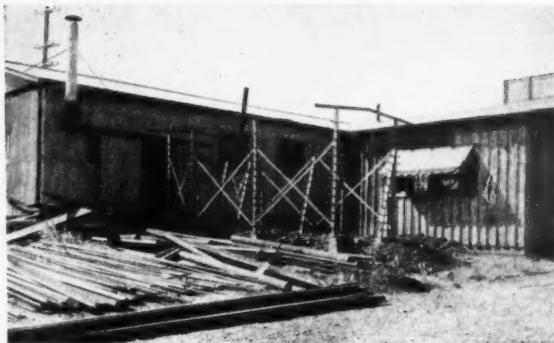
### Inventory control

**Why hold everything up because a nut or bolt is not available, or tie up money, just for lack of a simple control system?**

Accessible in the corner, and of labor costs in handling material clearly indicates that inventory control more than pays for itself.

Simple procedures for inventory control are: (1) allocating a portion of precious floor space as a stockroom, (2) building sufficient shelves and racks to hold material, (3) labeling and sorting parts, (4) setting up a simple system for inventory of items, showing order point (determined by previous demands of the item, and is changed as necessary to suit the flow of business) and order number, or a perpetual inventory system where practical.

These procedures involve time taken from productive labor, but most manufacturers agree that they are indispensable. A stock room requires a stockroom man, another overhead item. A stockroom man may combine the function



IT'S NEVER too soon for inventory control to start. Every plant, small or large, needs it. Here, putting up racks for steel.

of shipping clerk, internal ordering, maintenance, clean-up and miscellaneous necessary functions.

#### Sales management

**Feast or famine  
method won't build  
steady flow of sales.  
Function must be  
built from ground  
up, just like ma-  
chine itself.**

Assuming again that the manager is thoroughly familiar with the engineering and production of his product and the industry or consumers he serves, sales constitute another Achilles Heel of the small manufacturer.

This is particularly true of the manufacturer whose products are sold to industry. Where consumer products are manufacturer, a

sales organization is such an integral part of the business it is hardly conceivable that the business can do without one.

Where the product manufactured is a specialty one to be used industrially, however, a sales organization often is neglected.

Jones Manufacturing Co., for instance, finds his orders coming in bunches, crowding him, then dropping off, crowding again. He determines to stabilize his flow of sales and decides to do something about selling. But he knows little about salesmanship, credit and collections, the mysteries of advertising and publicity, dealerships and other integral parts of a sales organization.

He may decide to tackle it in easy steps. He will devote more of his time to seeing potential customers and selling. He will advertise modestly in the trade journals—the advertising managers will help him make up ads, or he may secure the services of a qualified advertising agency.

Excellent steps, both of these, but neither tending to build up a sales organization, a long-range arrangement for keeping a volume of sales, for reaching all potential customers, and giving the best possible service to customers.

Jones takes to beating the bushes for orders, when he needs them. When his plant is busy he must remain in his office ironing out production details. When business is slack he takes to the road again. He realizes this is not organized selling.

In building up his sales organization, Jones first considers his internal set-up. Are his office practices calculated to make a good impression and to take care of details?

Are visitors received cordially? Is the telephone answered promptly and courteously? Are incoming letters answered promptly? Is correspondence properly routed throughout the organization? Have sufficient forms been devised to simplify record keeping and fact finding?



THERE ARE various ways to get sales representatives. But good management must make sure they know your equipment.

Have systems been set up to routinize periodic jobs, such as reminder letters for over-due accounts, billing, acknowledging orders, shipping orders, etc.? Has all possible advantage been taken of modern machines to simplify office work, such as dictating machines, intercom systems, book-keeping systems, etc.?

Good internal organization is a beginning, and a bare beginning. But there are still sales to be made.

Jones may locate a salesman who will sell on a commission basis, a practise often effective in the heavy and specialized machinery line, where the selling price of machines may start at \$10,000 and a 10% commission may make the investment of time worthwhile. But these commission salesmen sell Jones' machines in their spare time, and may or may not produce a steady volume.

Jones may hire a salesman on a full-time basis. Finding a salesman for specialized machinery is no mean feat. A man may know the problems of his industry, yet be a stranger to salesmanship. Or he may be a topnotch salesman, yet be ignorant of the problems his machinery can solve. A technical salesman, who knows how to sell by showing prospective customers how Jones' machines can solve their problems, is a rare gem and one worth a good price.

Jones may set up dealerships. In this selling method, he may have to spend considerable time and funds educating dealers in the functions of his machines.

Selling efforts need to be coordinated with each other. This requires sales management, a function which may be assumed by Jones, himself. In corporations, one of the partners often assumes these duties. A good technical advertising agency may assume some of the functions of sales management.

Part-time help is a possible, though not always perfect, solution. Here the small manufacturer may need to look to untapped sources of trained help, semi-retired salesmen, housewives with experience in advertising, accounting, or office management and teachers seeking part time jobs.

#### Business constantly changing

*In his quest for an equal position in the competitive scheme, the small businessman finds the essential difference between his organization and that of larger plants is a matter not of kind, but of degree. He finds that business practises change with changing times and he must be a student, who learns and grows too with the times. He finds also that to obey the rule that "the place of management is to manage" he must delegate some responsibilities.*

*The challenge to the small manufacturer is stupendous. With a little ingenuity, however, the small manufacturer can adapt big business practises to his plant. No business is too small for these practises.*



ROUTINE CHECKS are taken daily in the laboratory for light reflection characteristics, thickness and acid resistance. Burette stand is used to test solutions for pickling room control. Control charts are posted on the back wall.

# THOROUGH QUALITY CONTROL will make your supervision easier

*Faster training at Smoot-Holman;  
employees understand jobs better*

SIX YEARS AGO the thirty-five year old Smoot-Holman plant in Inglewood, California installed a quality control system in its porcelain enameling department which has cut rejects or "redos" to an absolute minimum.

By careful "control" from the purchase of steel to the final inspection it is possible to turn out superior porcelain enameled commercial and industrial lighting fixtures and home plumbing fixtures with minimum supervision.

The quality control system was set up under the leadership of Joe Disario, who came to Smoot-Holman well equipped for this work. Every material used and every step taken is controlled by chemical and instrument tests, and the results recorded on permanent cards. The system has done much to eliminate guesswork and human deviations from the porcelain enameling process.

#### Control from the start

Control starts with the steel purchased. The purchasing agent keeps master control cards listing each batch and type of steel he buys. An inventory sheet shows the quality of steel purchased, and each stock is identified

with the gauge, sheet size, and type of steel.

Upon delivery to the cutting room, a card is made out for each batch of material to be cut. Following cutting and other related operations, each individual skid load of a given size of cut steel is issued a delivery slip showing the date, item or part number, operation, count, and the work order number.

#### Tags and work cards

As the Tin Shop Cutting Room and Steel Storage Area receives the steel from the Shipping Department, it marks each bundle with a tag showing its thickness, size of sheet and type of steel (such as Deep Draw Enameling Iron, Deep Draw Cold Rolled, etc.). This information is obtained from the purchasing record attached to each bundle.

In addition to the individual tags for the bundles, a work card is issued for the entire batch of one particular size and type of material to be processed.

The steel then is cut in accordance with instructions entered on the work card, which is a duplicate of a master card kept on file in the press room office. The duplicate card stays with

the job until it reaches the enameling department.

In addition to their normal work, which involves only "regular" type steel, the company also processes some stainless steel on aircraft sub-contracts. In this case, the stainless steel has additional information included along with the normal information on the work card. Stainless steel is brought in under a purchase order, and is accompanied by a certification sheet showing the chemical and physical analysis of the steel.

Upon receipt, the work card for stainless steel batches is marked with the purchase order no., Rockwell test result and actual thickness of the steel, and the order is sampled and Rockwell tested for hardness to verify the specifications.

The purchase order number is marked on the bundle and the job carries the purchase order number with it until assembly is completed into the finished part. A second Rockwell Hardness test is also made after the steel is blanked and before forming as additional insurance against mistakes.

Drawing compounds used to lubricate the sheet steel while being formed are tested periodically to insure satis-

factory cleaning in the pickling department. The solutions in the pickling and cleaning tanks are titrated to see that pH is kept to specifications.

Alkali is maintained at seven to eight ounces per gallon, and sulphuric acid at six to seven per cent. The nearest neutralizer tank is also checked daily by standard chemical solutions to see that the  $\text{Na}_2\text{O}$  content is maintained at .15 to .20 by weight. All items from the press room to be porcelain enameled are cleaned, pickled, dried, and then trucked to the spray booths ready to receive the ground coat. The ground coat, often referred to as a base coat, is usually a cobalt enamel coat.

In the mill room, all types of enamels are formulated to produce the highest quality ware possible with the particular combination of application, base material, and firing conditions to be met. At Smoot-Holman, heavy density grinding balls are preferred.

After a series of tests with zircon and alumina balls, which have a density of 3.8 compared to 2.4 for porcelain balls they adopted Coors Alumina balls, which give the work impact of the larger porcelain balls. The heavier balls are preferred because they take up less volume in the mill so there is more room for frit. A series of tests run at Smoot-Holman proves that with the heavier balls mill hour savings

average between 40 and 50 per cent, and the volume of material milled increased 35 per cent per charge.

Even more recently, Smoot-Holman has tried reducing the mill charge to 1200# and added 600# of Coors 2-in. balls to bring the level up to the level obtained when using porcelain balls. This reduced the milling time to 5½ hours per mill. This is the same frit charge as with porcelain balls, but with 2900# of H.D.M. to a comparative 2300# R.G.M.

Every mill charge is tested for specific gravity, and fineness and held to minimum and maximum specifications. To check the fineness, a 50-cc. sample is put through a 200-mesh

## **SAMPLE OF WORK CARD**

**Card is issued for entire batch of one particular size and type of material. Master is kept on file in press room office, duplicate stays with job until enameling department.**

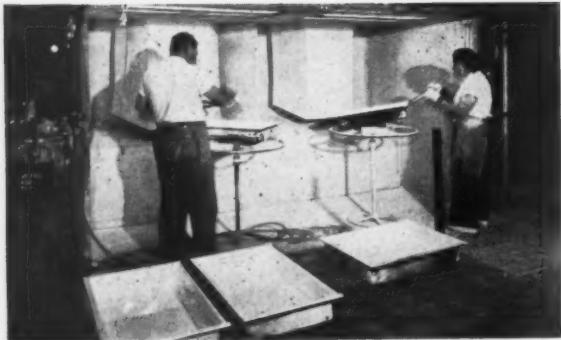
"Blank" operation forms the exterior shape.  
"Form" gives 3rd dimension to it.

#### Dimension of the piece.

**B. D. = Blanking Die.** This column shows the operator what die combination, or what tool to use in performing the operation.

This shows where the tool is stored, as 28E=Section 28, shelf "E".

This column tells the operator what machine to use. #6 = Press No. 6.



MEDICINE CABINETS being sprayed by sprayer and helper. Daily spray tank control maintained on each batch of enamel.

screen, and is washed down and shaken. Then it is dried, and the residue is weighed. To get the specific gravity, 100 cc. is put in a container, and the weight of the slip is compared to water.

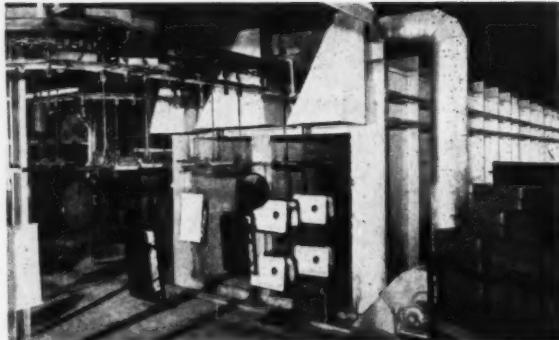
The Irwin Slump test is also used; a known amount of slip is poured on a target sheet, and the tester sees how far the enamel flows and spreads. It enables the operator to control the behavior and quality of the batch. This insures that the quality of enamel which is sent to the sprayer is uniform throughout the year. By critical control procedures, the guesswork and human element is eliminated.

After a test is given to each separate mill charge and maintained at the controlled specifications, the enamel slip is discharged through a Ferro-Franz rotospray and magnetic separator. Then it is stored and allowed to age. Storage barrels are dated and labeled with their batch number.

#### Spraying and enameling

Spray tanks are always cleaned before refilling with the proper material. From storage tanks enamel is transferred to spray tanks, which are then connected to the air supply lines at the various spray booths. At the spray booths, the clean, dry shapes are sprayed with ground coats and subsequent finish coats. After they have been sprayed with the ground coat, the sinks, medicine cabinets, or lighting fixtures are hung on a drier line conveyor. This hot air drier subjects the work to a temperature of 450° F. Here the water is driven off.

After the ground coat is dried, the object goes through the enameling furnace, which is in the shape of a large "U." The furnace is 90 ft. long and the overall travel through the furnace is 180 feet. Upon entering the furnace, the object travels through the pre-heat zone before it enters the 40½-foot high-temperature zone and is fused to the steel body at 1,580°.



PLUMBING EQUIPMENT on special burning racks suspended from chain conveyor is shown passing through enamel furnace.

After this conveyor passes through a cooling zone, it then leaves the furnace. The total time in the furnace is about 20 minutes, of which 7 to 8 minutes is spent in the hot zone.

After the ground coat is cooled, samples selected at random are given the "impact test." This consists of dropping a metal ball of a specific weight onto the enameled surface from a given distance. The inspector can judge the quality of the ground coat by the impression made and the pattern of the damaged area at the point of impact.

The enamel superintendent has set up the various tests and controls which enable the plant to hire unskilled help, and then train them on the job to do specific operations. These controls have paid off many times in dollars. It has made it possible for employees to be quickly educated to do their jobs.

When the white finish coats are sprayed, the enamel is tinted with an organic dye, which enables the sprayer to see how thick he is spraying. Naturally, in putting the first white finish coat on the black ground coat, it is easy to see how thickly the enamel is being sprayed on. But with successive white coats, it is difficult to see the thin

spots unless the enamel is tinted. It is usually tinted a light blue, which burns white when fired in the furnace. Also inspectors use a tinted crayon to circle defective or thin spots. This crayon circle also burns white.

When the final porcelain coat has been fired in the furnace, and allowed to cool, it is given various laboratory tests. A reflectometer checks the light reflection characteristics of the porcelain surface on the lighting fixtures. A thickness test is given. A 10 per cent citric acid solution is used to test the acid resistance of the porcelain enamel on the plumbing fixtures.

#### Gas in a major role

Gas plays an important role in the entire porcelain enameling operation at Smoot-Holman. The pickling tanks, the dryer, and furnace each has a Petrofire combustion system. This is a dual fuel system designed to burn natural gas or vaporized oil. During the periods of curtailment of natural gas, the unit is quickly switched from gas to the oil cycle. Vaporization of oil by this unit results in a gas-like type of combustion on the oil cycle which is very important for good results in porcelain enameling.

#### RESULTS of alumina and porcelain tests

Alumina	— 32 mills of 1,600# chg. — 51,200# — 288 hrs.
	— 9.0 hrs. av. per mill
Alumina	— 42 mills of 1,600# chg. — 67,200# — 365 hrs.
	— 8.7 hrs. av. per mill
Porcelain	— 42 mills of 1,200# chg. — 50,400# — 569 hrs.
	— 14.2 hrs. av. per mill

In these tests, a quarter million pounds of ground coat frit was milled with a ball loss of only 200#, and with three period checks during 1951 the mill lining measurement went as follows:

1st inspection 5-23-51 — 43-1/4" x 55"  
2nd inspection 9-20-51 — 43-5/16" x 55-3/16"  
3rd inspection 4-7-52 — 43-3/8" x 55-3/8"  
Total of 3/8" wear on shell  
Total of 1/8" wear on end

Two mills using porcelain balls showed a wear for the same period of 1/8" on end and 1/8" to 1/4" on shell. Thus the heavier density balls were no worse on wear.

# INSTITUTE OF INDUSTRIAL PLANT DESIGN

Ambassador Hotel

• Los Angeles • February 20-21, 1953

## FRIDAY, FEBRUARY 20

REGISTRATION 8:30 to 9:30.

### MORNING SESSION, 9:30 to 12

#### Modernization and Expansion

##### "Elimination of Bottlenecks"

A review of procedures for the elimination of costly, non-productive expense resulting from the fitting of an industrial operation to a structure instead of the reverse, and/or other causes.

Structural changes to meet vertical and horizontal space requirements, or to clear floor space of obstructions; and, changes in access, egress, surfacing, and facilities for free flow of materials or products.

by ALBERT C. MARTIN, JR.

Albert C. Martin & Associates

Mechanizes handling installations to break flow slowdowns.

by BENJAMIN BORCHARDT

Benjamin Borchardt & Associates

Retroactive code requirements, including dangerous chemicals.

by ANTHONY THORMIN, Architect.

#### PANEL DISCUSSION

\* \* \*

##### "Analysis of Adverse Effects of Creeping Obsolescence"

An economic consideration of the adverse influence, in competitive enterprise, of gradual and uncorrected advance of plant obsolescence.

Space use.

by BEN H. O'CONNOR

Lunden, Hayward & O'Connor

Appearance and color as affecting production.

by HARRY R. GREENE

Industrial Designer

Mechanical, including air conditioning.

by LESTER R. KELLEY

Consulting Mechanical Engineer

Electrical, including lighting.

by FOSTER K. SAMPSON, EE. and ME.

Kistner, Wright & Wright

#### PANEL DISCUSSION

\* \* \*

#### LUNCHEON SESSION

##### "Technical Procedures in Plant Modernization Programs"

A discussion of practicable methods designed to accomplish the best, most economical results.

For architecture—

by GEORGE B. ALLISON

Allison & Rible

For engineering—

by PAUL E. JEFFERS

Consulting Structural Engineers

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#### AFTERNOON SESSIONS

##### New Industrial Plants

##### "Plant Design Procedures"

A review of up-to-the-minute techniques of industrial plant design.

**A N INSTITUTE on Industrial Plant Design, tailor-made for all those desiring information and ideas either for a new plant or remodeling an old one, will be held at the Ambassador Hotel, Los Angeles, February 20-21. It is sponsored by the Consulting Engineers and Architects Committee, produced by the Business Service Department of the Los Angeles Chamber of Commerce, and Earle V. Grover, president of Apex Steel Corporation, is general chairman.**

**It is a timely companion-piece to the series of articles on industrial plant design which have been appearing in Western Industry over the last two years. The function of the Institute is described as follows:**

**"To provide factual information to industrial management upon the economics of plant modernization and expansion programs, effective procedures in new plant design, and to demonstrate the local availability of competent, experienced professional talent in these important fields."**

Site selection and planning; logistics planning; and, space planning and coordination.

by H. L. GOGERTY, Architect

Engineering selection of structural systems.

by E. C. HILLMAN, JR.

Consulting Structural Engineer

Hillman & Nowell

Mechanical and electrical planning.

by DONALD T. ROBBINS, Chief Engineer

Holmes & Narver, Inc.

#### PANEL DISCUSSION

\* \* \*

##### "New Materials, Equipment and Processes"

A review of new developments of practicable character that merit consideration in design of new plants.

Selection of Materials.

by VINCENT PALMER

Vincent Palmer & Associates

Selection of Equipment.

by ROBERT A. TRUMPI

Trumpis-Collar & Associates

Selection of Processes.

by HOWARD H. HEILMAN

Consulting Chemical Engineer

#### PANEL DISCUSSION

\* \* \*

#### DINNER SESSION

##### "What the Use of Qualified Professionals Means to Industry in Modernization or New Plant Programs"

An industrialist's viewpoint.

by MORRIS B. PENDLETON, President

Plumb Tool Company

A contractor's viewpoint.

by WILLIAM A. SIMPSON, President

William Simpson Construction Co.

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## SATURDAY, FEBRUARY 21

#### MORNING SESSIONS

##### "Elements and Factors of Costs"

A discussion of cost elements of modernization and new plant programs, together with effective methods of cost control.

Size-zoning, codes and terrain; utilities, sewage and waste disposal, storm drains, etc.

by RAY O. KUSCHE, President

Quinton Engineers, Ltd.

Structural shell-fluctuations in current building costs; advertised vs. actual costs; and first cost related to ensuing maintenance expense.

by MERLE F. SMITH, vice president and treasurer, T & S Construction Co.

#### PANEL DISCUSSION

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Mechanical and electrical installations, including air conditioning, power and light, and fire protection.

by RALPH E. PHILLIPS

Consulting Mechanical Engineer

Ralph E. Phillips, Inc.

Auxiliary structures.

by LAWRENCE W. DAVIDSON, Architect

Donald R. Warren Co.

Budget control of costs.

by GEORGE O. CARLSON, Resident Partner

Ernst & Ernst

Professional services.

by WELTON BECKET, Architect

Welton Becket & Associates

#### PANEL DISCUSSION

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#### LUNCHEON SESSION

##### "How to Select the Engineer and Architect"

Effective procedures to assure coordination between the Owner, Architect, Engineer, and Contractor.

by HARRY L. MASSER

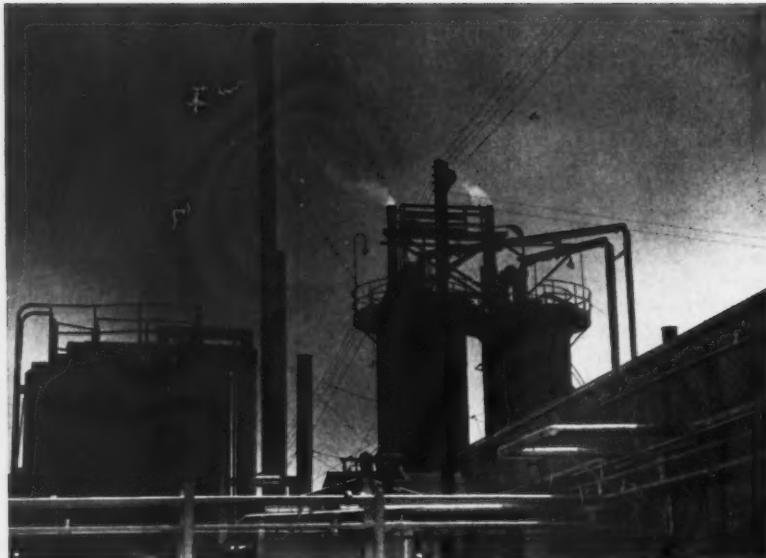
Executive vice president

Southern California Gas Co.

\* \* \*

1:45 P. M.—Adjournment of institute and opening of exhibit of photographs of architectural and engineering projects.

3:00 P. M.—Closing of exhibit.



**BEFORE:** At Pabco Products, Inc., in Emeryville, an increasing load on the vertical spray condensers limited the ability of the equipment to control discharge of oil mist into atmosphere.

## INGENIOUS METHODS FOR . . .

*San Francisco Bay area plants . . .*

**S**MOKE CONTROL is relatively easy. Seventy-five percent of all smoke which pollutes the air is caused by carelessness or improper combustion or obsolete equipment.

It is tougher to do business with the rest of the list of air pollutants: dusts, gases, vapors and fumes. Engineers, however, have come up with many ingenious ways to cleanse the discharges from industrial plants.

Dusts and fly ash and some fumes can be concentrated and eliminated from high-temperature gases by electrostatic precipitators. Bag filters, built on the vacuum cleaner principle, can clean low-temperature gases. Scrubbers of several types can be used effectively.

Ultra-sonic precipitators show promise for use in high temperatures and to collect extremely small particles. Odors from ani-

mal and fish rendering plants are destroyed by the selective oxidation action of chlorine dioxide.

Most recently, a process has been developed to deodorize some gases by passing them through a heated catalyst. The operation generates more heat which can be captured for use in place of some of the otherwise needed fuel.

A fundamental principle for reducing smoke and other contaminating substances is to prevent their reaching the air. Once they are released to the atmosphere, dispersion depends on a friendly wind. Plant engineers are devising many forms of collecting systems for specific operations to keep dust, fumes, vapors and gases originating from industrial processes from reaching the air.

Many factors will affect the final choice of equipment. There

is an overall pattern which, in many cases, enables the classification of specific contaminants. Thus an engineer can designate the proper method of collecting a designated percentage of the total contaminant involved. These seven facts about the situation must be known: (1) the size of the particles, (2) the apparent density, (3) chemical stability, (4) power to absorb water, (5) volume, (6) plant site, (7) operation cycle.

San Francisco Bay Area industrial firms are engaging in action to whip the menace of air pollution. They have gone far beyond the talk stage. They have spent much time and money to get action, and a progress report has been issued by the San Francisco Bay Area Council.

Accompanying is a random sampling showing what representative industries are doing.

**AFTER:** Substantial reduction in amount of oil mist discharged resulted from installing a water scrubber tower, followed by a coalescer and water spray. Oil is also recovered.



## ... AIR POLLUTION CONTROL

### ... tackle problem on voluntary basis

*American Smelting and Refining Co.* In 1937, this company replaced its 150-ft. stack at Selby with one of the world's highest stacks—605 ft. This resulted in effective dispersion of gases from the smelter.

In the same year, the company installed a plant to capture major amounts of sulfur dioxide gas which formerly went into the air, and converted this gas into sulfuric acid. More of the waste gases were captured when a liquid sulfur dioxide plant was installed in 1947.

#### Ten years pioneering

During the last ten years alone, the company has spent more than \$155,000 for improved ventilation and collection of dust and fumes—this in addition to costs for the stack and by-product chemical plants. Over more than 30 years this company has conducted what most authorities consider to be the work of outstanding and fundamental importance among all studies of effects and methods for control of air pollution. Results are evident at the company's plants.

*California Spray-Chemical Corporation.* Dust control systems are located throughout the plant. The most recent major installation is a baghouse, containing 2,000 square feet of cloth, installed in 1951 to control dust collected from a new packaging operation in the Richmond plant. Total investment in various units of dust control, \$155,000.

*Consolidated Chemical Industries, Inc.* Virtual elimination of the discharge of organic particles and odors from processes involving steam cooking of animal waste products has been accomplished by passing steam through a helical separator and lime water scrubber. This plant, because of its location on Bayshore Highway, has been the target for many complaints of odors from its process—now greatly improved. The company is continuing to expand its air-pollution control facilities.

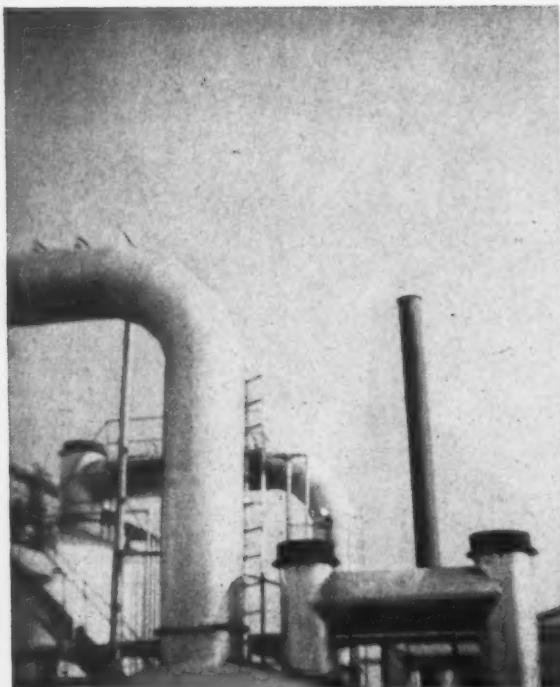
*Fibreboard Products, Inc.* This company put a new sulfate pulp and paperboard mill in operation near Antioch in 1951. The mill was equipped with

standard devices for controlling stack emissions. There were, however, complaints. In recognition of the need for cooperative action, Fibreboard underwrote a year-long study by the Stanford Research Institute and its own research department has worked on the problem. The company has installed additional electrostatic precipitators, several types of stack scrubbers and other devices. Cost, \$500,000.

*Monsanto Chemical Co.* A dust collection system has been installed wherever dusts are prevalent throughout the Santa Clara plant.

*Pabco Products, Inc.* Due to the demands of increased production and changes in operating techniques, a considerable increase in load on the vertical still spray condensers has developed in recent years. This condition has limited the ability of the equipment to control discharge into the atmosphere of an oil mist.

In selecting the most economical method of solving the problem, attention was paid to the possibility of recovering oil for use as fuel in the power



Trumbull Asphalt, San Leandro, completely enclosed the asphalt blowing unit, and sprayed chemically treated water on smoke as it passed up the stack. Reclaimed oil is used for fuel.

plant. In addition, it was felt that existing equipment should be used so far as possible.

#### Condensing system

The process employed consists of a water scrubbing tower followed by a coalescer, followed by a water spray. The scrubbing tower consists of a 3-ft. depth of 2-in. ceramic raschig rings with water flowing countercurrent to the gas stream. The water condenses the oil and carries it away to settling tanks for recovery. The cool non-condensable vapors and oil mist then pass upward through two feet of glass wool. The glass wool traps oil droplets, and drains them back into the collecting system.

The final water spray is for the purpose of cooling the vapors, and as a safety measure in event of failure of the other mist control facilities. This system, designed and installed by Pabco engineers, has resulted in a substantial reduction in discharge of oil mists from the vertical stills.

**Permanente Cement Co.** Six Cotterell electrostatic precipitators have been installed by Western Precipitation Corp. of Los Angeles, which eliminate 99.5% of all dust from exhaust gases. Also, two 225-ft. stacks of unlined reinforced concrete, for carrying cleaned gases and steam, were installed

by The Rust Engineering Company.

There are two nodulizing drums for nodulizing kiln dust; one installed by F. L. Smith & Co., New York, the other made and installed by Permanente engineers. The clinker coolers are equipped with dust collectors. Miscellaneous belts, loaders, electrical equipment, etc., bring the investment up to more than \$1,000,000.

**Philadelphia Quartz Company of California**, Berkeley. Escape of fine sodium metasilicate dust, a medium strength alkali, from plant processing operations, was eliminated by the installation of a Schneible multi-wash dust collector, type "JC" Jr., capacity 8,000 cu. ft. per min. This equipment efficiently removed a dust too fine to be retained by cyclone collectors, and is readily soluble in water.

#### Began in 1944

The price of the Schneible unit when purchased in 1944 was \$1,690. This did not include a 10-hp. motor to operate it, nor a motor and pump for circulating the wash water. In addition, there were the usual air ducts leading from the processing equipment to the washer, and a small size iron tank to catch the wash water in the circulating system.

**Shell Chemical Corporation's** \$60,000 fume disposal unit, part of a



At Permanente Cement Co., near Redwood City, nodulizing drums recover kiln dust into walnut-sized nodules and feed them to kilns for burning.

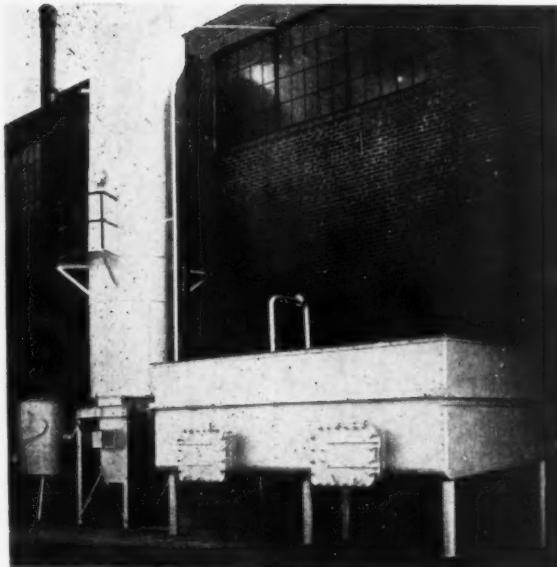
\$110,000 waste collection system at its anhydrous ammonia plant. The new system is designed to improve the quality of plant effluent water and to eliminate odors resulting from use of oil refinery waste acids. By using these waste acids as a process raw material for manufacture of ammonium sulphate, an important fertilizer for Western farmers, Shell Chemical alleviates a serious waste disposal problem for refineries throughout the State of California.

#### Series of steps

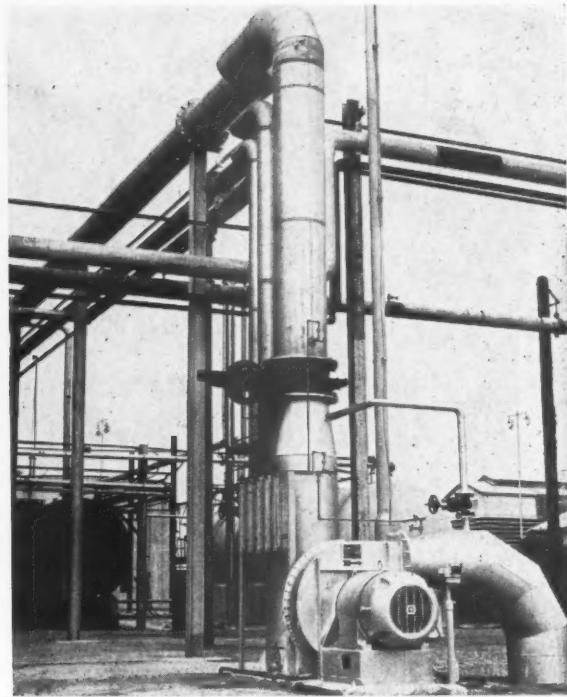
Fumes emanating from various pieces of equipment in the plant are drawn through stainless steel piping to the suction of a large blower. The blower discharges through a water seal box and flame arrestors to boiler fireboxes. The purpose of the water seal and flame arrestors is to prevent flashback from the fireboxes to the process equipment. The fume combustion products which are harmless are diluted with regular boiler stack gases and discharged to the atmosphere.

Completion of this fume disposal unit is another step in a series undertaken in recent years to prevent contamination of the atmosphere and streams in the vicinity of the plant site.

**Southern Pacific Co.** Natural gas



Helical separator and lime water scrubber at Consolidated Chemical Industries, San Francisco, virtually killed all organic particles and odors.



Shell Chemical, Pittsburg. Blower in foreground sucks the fumes from combustion products into water seal box and flame arrestors, thence to boiler firebox for dilution with stack gases.

has replaced oil as fuel in the company's stationary boilers at the West Oakland creosoting plant and West Oakland central power house. Fuel oil used on firing the Oakland Pier pumping plant is treated with an additive which has the effect of reducing smoke.

Open fires for rubbish disposal have been eliminated, and all refuse is either burned in incinerators or buried. The company is carrying on a very large dieselization program on its road, which will eliminate smoke contributed by oil-fired locomotives.

*Springfield Cedar Co.* Lumber mills are cited frequently for creating local smoke nuisances and occasionally are contributors of air pollution. This particular company makes pencil slats from California incense cedar. It operates one of the five mills in this state which satisfy the entire national needs and also export their products in substantial volume.

#### Good housekeeping helped

With assistance of the authorities, nuisance from this plant was eliminated by instituting a good housekeeping program, by attention to better firing of more nearly uniform mixtures of scrap for boiler fuel, by improving operation of the "electric eye" smoke indicator, and by enlarging the cyclone collector installation.

*Standard Oil Co.* The most troublesome problem at an oil refinery is the disposal of sulfur compounds resulting from distillation and treatment of sulfur-bearing crude oils. This situation has been solved at the Richmond refinery by installation of a Girbitol unit which removes hydrogen sulfide from gases produced in cracking operations.

The hydrogen sulfide recovered is converted to sulfuric acid—a saleable product—at the rate of 100 tons per day. Many other installations—21 in all, costing over \$1,750,000, including the Girbitol unit—have been made to control air pollution.

#### Full combustion system

Modern high-pressure boilers with specially designed fireboxes provide complete combustion of fuels. Smoke indicators and alarms immediately reveal any mis-firing which can be corrected quickly. Fume-collecting systems carry fumes to furnaces for incineration. A \$6,000 meteorological station was set up for correlation of weather conditions in connection with the company's fume control program.

*Trumbull Asphalt Co.*, San Leandro. All of the asphalt blowing unit is completely enclosed, and all discharge of oily fumes and odors is completely eliminated through a treatment designed by William Miller, general

superintendent of the plant. This reclaimed oil is used for fuel.

#### Smoke sprayed

The eliminator resembles a multi-nozzle shower powered by a small gasoline engine. Chemically treated water is drawn from a huge barrel and sprayed on the smoke as it passes up a smoke stack. A false bottom in the stack catches the falling solution and returns it to another barrel. The original barrel containing the pure solution is attached to the residue barrel so that the first container may draw from the second.

At intervals in the day, the impure solution is filtered and the contents analyzed for possible re-use. The system also has been put in use at Trumbull plants located at Compton, Calif., Portland, Ore., and also in Chicago and Detroit.

*Union Oil Company.* Facilities for control of noxious and odorous gases have been installed at the Oleum plant. The refinery maintains a continuous record of atmospheric conditions in the vicinity of the plant. In case of equipment failure—which might release gases and/or fumes—equipment is shut down immediately. The company reports the problem of air pollution is a prime consideration in design of new equipment.

# METAL SHOW AND CONGRESS IN LOS ANGELES

*Attendance and displays promise to  
top all previous Western events*

THE WESTERN Metal Exposition and Western Metal Congress, in Los Angeles March 23-27, promises to break all records for attendance and displays. Pan-Pacific Auditorium, engaged for the Exposition to provide adequate room, already has overflowed into a couple of pavilions to be erected alongside. The Congress will be at the Statler Hotel.

Response has been so great that Los Angeles will be a more or less permanent location for this biennial affair from now on, according to William H. Eisenman, national secretary of the American Society for Metals, who is in general charge of the combined affairs. Heretofore the meetings have alternated between Los Angeles and Oakland.

#### The exhibits

In the neighborhood of 300 exhibitors will have displays. Among new features are acres of crimson carpeting backed with foam-rubber to make walking easier, huge colorful photomurals showing the development of aviation, and an "industrial" theater where the latest in educational films on metal engineering will be screened.

Imported as well as domestic machine tools will be shown.

F. L. STAMM  
Chairman,  
General  
Committee



W. C. HITT  
Chairman,  
Non-Destructive  
Testing Program



H. N. FARMER, JR.  
Program  
Chairman



K. L. CLARK  
Exhibits  
Chairman



J. A. CHALK, JR.  
Vice Chairman,  
General  
Committee



W. H. EISENMAN  
In general  
charge of  
entire show



#### The technical program

New developments in titanium, zirconium and other metals for war and industry will be discussed at the Congress by noted speakers from production centers throughout America. Papers on zirconium, according to Mr. Eisenman, just released by the Atomic Energy Commission, will be given for the first time before an audience.

A seminar on ultra-high strength alloy steels for aircraft and automobiles will be held by the Society of Automotive Engineers, Southern California Section, at the Congress.

Societies cooperating with American Society for Metals in sponsorship of the exposition-congress include American Society for Non-Destructive Testing, American Welding Society, American Society of Tool Engineers, American Society for Testing Materials, Purchasing Agents Association of Los Angeles, Army Ordnance Association—Army Post, American Electroplaters Society, American Society of Civil Engineers, American Ceramic Society, Society of Plastics Industry and others.

Exposition gates will admit without charge those who show membership cards of cooperating societies or special invitations issued by exhibitors. Others

may enter on a registration fee of \$1. Congress sessions will be open to everyone.

#### The committees

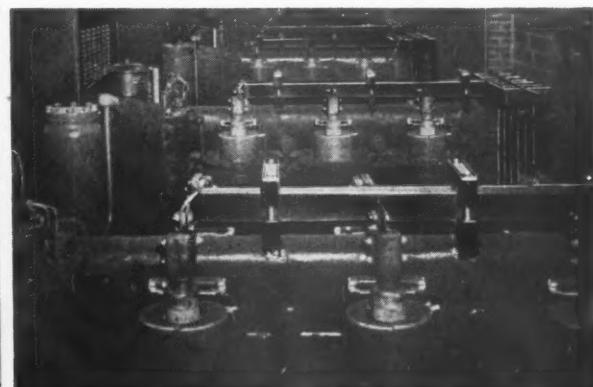
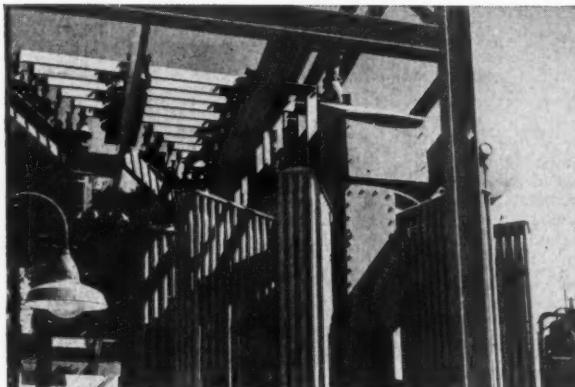
General committee: F. L. Stamm, General Metals Corp., (chairman, L. A. chapter, ASM), chairman; J. Albert Chalk, Jr., Bethlehem Pacific Coast Steel Corp., and Jenmore Dickason, Metal Control Laboratories, vice chairmen; S. R. Kallenbaugh, Timken Roller Bearing Co., secretary; James R. Cady, University of Southern California, treasurer.

Special chairmen: Stuart E. Oliver, A. M. Castle & Co., information and registration; Kenneth L. Clark, International Nickel Co., exhibits; Henry A. Curwen, Earle M. Jorgensen Co., attendance; Don Roda, Plumb Tool Co., cooperating societies; C. Donald D'Amico, Joseph T. Ryerson & Son, publicity; Fred H. Currie, Fred H. Currie Associates, entertainment; Howard N. Farmer, Jr., Security Engineering Co., program.

American Welding Society: William H. Skewis, V.F.P. Co., program chairman; Hugo W. Heimke, California Alloy Products Co., co-chairman. E. O. Williams, Victor Welding Equipment Co., AWS director at large, advisory.

...Continued on page 52

# It takes a *lot* of Copper to make a *lot* of Chemicals!



These photographs show a lot of copper bus bar in a new plant of a great chemical company, whose name and location cannot be disclosed. The copper carries heavy currents to electro-chemical equipment for the production of valuable products used in national defense and in industry. Revere furnished 325,000 pounds of bus bar for this service, the bar going into substations, rectifier stations, and cell houses. In addition, at the time of installation the Revere Technical Advisory Service collaborated with the customer in working out some difficult details in the design of switches. If you need electrical conductors, remember that copper has the highest electrical conductivity of all the commercial metals, that Revere makes bus bar, and that the Revere

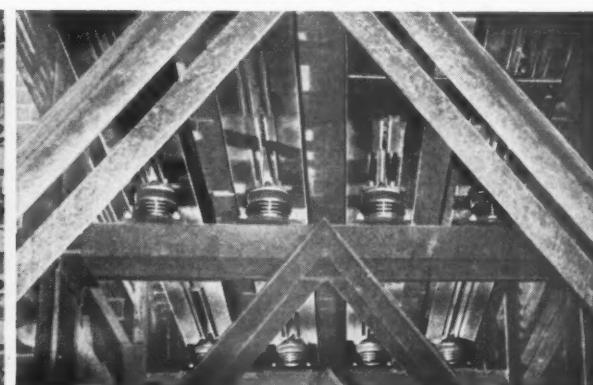
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# METAL SHOW AND CONGRESS

...Continued from page 50

## SOME SPEAKERS



H. L. GILBERT  
Bureau of  
Mines,  
Albany, Ore.



POL DUWEZ  
California  
Institute of  
Technology



J. E. DORN  
University of  
California



A. H. ROBERSON  
Bureau of  
Mines,  
Albany, Ore.



S. M. SHELTON  
Bureau of  
Mines,  
Albany, Ore.



W. M. RAYNOR  
Foote Mineral  
Company,  
Philadelphia

Society for Non-Destructive Testing technical program: W. C. Hitt, Douglas Aircraft Co., program chairman; Gerold H. Tenney, Los Alamos Scientific Laboratories, Los Alamos, New Mexico, and W. J. Erickson, Westinghouse Electric Co., Sunnyvale, California. \* \* \*

## TECHNICAL PROGRAM

### Western Metal Congress

STATLER HOTEL

Monday, March 23—9:00 A. M.

#### Titanium

Mechanical Properties and Strain Aging Effects in Titanium—by F. D. Rosi and F. C. Perkins, Sylvania Electric Products, Inc.

The Influence of Insoluble Phases on the Machinability of Titanium—by R. M. Goldhoff, H. L. Shaw, C. M. Craighead and R. I. Jaffee, Battelle Memorial Institute.

Mechanical Properties, Including Fatigue of Titanium Base Alloys RC-130-B and Ti-150-A at Very Low Temperatures—by S. M. Bishop, J. W. Spretnak and M. G. Fontana, Ohio State University.

The Titanium-Oxygen System—by E. S. Bumps, Studebaker Corp., South Bend, Indiana; H. D. Kessler and M. Hansen, Armour Research Foundation.

The Martensite Transformation Temperature in Titanium Binary Alloys—by Pol Duwez, California Institute of Technology.

Isothermal Transformation of Titanium-Chromium Alloys—by P. D. Frost, W. M. Parris, L. L. Hirsch, J. R. Doig and C. M. Schwartz, Battelle Memorial Institute.

Surface Hardening of Titanium by Carburizing and Induction Heat Treatment—by A. J. Griest, P. E. Moorhead, P. D. Frost and J. H. Jackson, Battelle Memorial Institute.

Tuesday, March 24—9:00 A. M.

#### Zirconium

(Symposium)

Zirconium Ores (The Raw Material Supply and Concentration Methods)—by O. C. Ralston, Bureau of Mines.

Manufacture of Zirconium Powder—by H. S. Kalish, Sylvania Electric Products, Inc. Reduction by Electrolysis—by E. Wainer, Horizons, Inc., Cleveland.

Refining by Hot-Wire or Other Techniques—by W. M. Raynor, Foote Mineral Co., Philadelphia.

Manufacture of Zirconium Sponge—by S. M. Shelton and E. D. Dilling, Bureau of Mines, Albany, Ore.

Consumable-Electrode Arc Melting of Zirconium Metal—by W. W. Stephens, H. L. Gilbert and R. A. Beall, Bureau of Mines, Albany, Ore.

Fabrication of Zirconium—by R. B. Gordon and W. J. Hurford, Westinghouse Electric Corp., Pittsburgh.

Tuesday, March 24—2:00 P. M.

#### Research

Effect of Carbon and Boron on the Hardenability of a Case-Carburized Steel—by R.

A. Grange and J. B. Mitchell, U. S. Steel Co., Kearny, N. J.

Properties of Some Hydrogen-Sintered, Binary Molybdenum Alloys—by W. L. Bruckart, M. H. LaChance, C. M. Craighead and R. I. Jaffee, Battelle Memorial Institute.

Effect of Alloying Elements on Grain Boundary Relaxation in Alpha Solid Solutions of Aluminum—by C. D. Starr, E. C. Vicars, A. Goldberg and J. E. Dorn, University of California, Berkeley.

Resistance of Cast Iron Nickel Chromium to Corrosion in Molten Heat Treating Salts—by J. H. Jackson and M. H. LaChance, Battelle Memorial Institute.

A Precipitation Hardening Cu-Ni-Si-Al Alloy—by B. B. Roach, R. B. Fischer and J. H. Jackson, Battelle Memorial Institute

Wednesday, March 25—9:00 A. M.

#### Zirconium

(Symposium)

Effect of Hydrogen on the Embrittlement of Zirconium and Zirconium-Tin Alloys—by W. L. Mudge, Jr., Westinghouse Electric Corp., Pittsburgh.

Determination of Hydrogen in Zirconium by the Hot Vacuum Extraction Method—by R. K. McGeary, Westinghouse Electric Corp., Pittsburgh.

A Simplified Procedure for the Metallography of Zirconium and Hafnium and Their Alloys—by F. M. Cain, Jr., Westinghouse Electric Corp., Pittsburgh.

Recovery of Cold-Worked Zirconium—by W. A. Bostrom and S. A. Kulin, Westinghouse Electric Corp., Pittsburgh.

The Solid Solubility of Tin in Alpha-Zirconium—by G. R. Speich and S. A. Kulin, Westinghouse Electric Corp., Pittsburgh.

The System Zirconium-Silicon—by C. E. Lundin, D. J. McPherson and M. Hansen, Armour Research Foundation.

The System Zirconium-Tin—by D. J. McPherson and M. Hansen, Armour Research Foundation.

Wednesday, March 25—2:00 P. M.

#### Research

The Effect of Dispersions on the Tensile Properties of Aluminum-Copper Alloys—by R. B. Shaw, L. A. Shepard, C. D. Starr and J. E. Dorn, University of California, Berkeley.

Austenite Stability and Creep-Rupture Properties of 18-8 Stainless Steels—by J. K. Y. Hum, Bechtel International, San Francisco, and N. J. Grant, Massachusetts Institute of Technology.

Recrystallization of Wrought Hydrogen-Sintered Molybdenum and Its Alloys—by M. H. LaChance, W. L. Bruckart, C. M. Craighead and R. I. Jaffee, Battelle Memorial Institute.

A Study of the Mechanism of the Delayed Yield Phenomenon—by T. Vreeland, Jr., D. S. Wood and D. S. Clark, California Institute of Technology.

A Study of Factors Controlling Strength in the Torsion Test—by R. D. Ollerman, E. T. Wessel, F. C. Hull, Westinghouse Electric Corp., Pittsburgh.

...Continued on page 54

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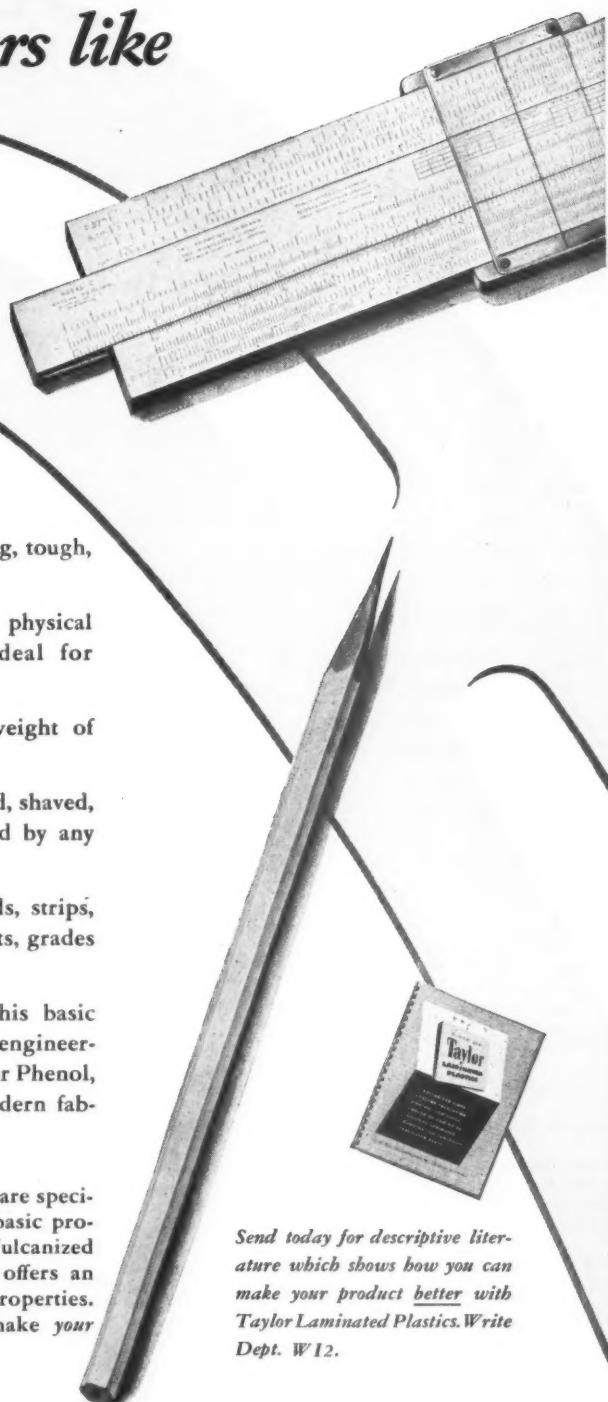
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# METAL SHOW AND CONGRESS

...Continued from page 52

Thursday, March 26—9:00 A. M.

## Zirconium

(Symposium)

Observations on the Alpha-Beta Transformation in Zirconium—by E. W. Hayes, E. I. duPont de Nemours & Co., Wilmington, Del., and A. R. Kaufmann, Massachusetts Institute of Technology.

Some Properties of High-Purity Zirconium and Dilute Alloys with Oxygen—by R. M. Treco, Bridgeport Brass Co., Bridgeport, Conn.

The Zirconium-Nickel Phase Diagram—by E. T. Hayes, A. H. Roberson and O. G. Paasche, Bureau of Mines, Albany, Ore.

General Comparison of the Metallurgy of Zirconium with that of Better-Known Commercial Metals—by Arthur D. Schweppe, Battelle Memorial Institute.

The Corrosion Resistance of Zirconium and Its Alloys—by L. B. Golden, Bureau of Mines, College Park, Md.

## EXHIBITORS

### Western Metal Congress and Exposition

#### Firms and their chief representatives

#### A

Ace Drill Bushing Co. .... George C. Beck  
Acme Steel Products Div., Acme Steel Co. .... R. M. Snodell, Asst. Adv. Mgr.  
Air Reduction Pacific Co. .... J. G. Bellinger  
Ajax Electric Co., Inc. .... Miss I. J. Dennery, Adv. Mgr.  
Allison Co. .... C. D. Cummings, Sales Mgr.  
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American Wheelabrator & Equipment Corp. .... R. R. Schalliol, Asst. Adv. Mgr.  
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Buehler, Ltd. .... G. W. Graves, Sales Mgr.  
Burklyn Company .... Roger J. Howell

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Challenge Machinery Co. .... R. C. Gould  
Chase Brass & Copper Co. .... Edw. J. Malvey, Adv. Mgr.

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Chicago Tool & Engr. Co. .... C. A. Palmgren  
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Cold Metal Products Co. .... E. L. Phillips  
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Commander Manufacturing Co. .... F. J. O'Laughlin

Compton Foundry Co. .... Harold D. Ellis  
Consolidated Vacuum Corp. .... Donald C. Deyle, Adv. and Exhibits

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Crane Veyor Corp. .... Don E. Snyder  
Crayton, Mr. F. M. .... Michael Stumm, Adv. Mgr.  
Crucible Steel Co. of America .... J. M. Gallant, Adv. Mgr.

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Hevi Duty Electric Co. .... E. E. Staples

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Kent Agency .... Walter G. Huber

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Knapp, James H., Co. .... R. P. Toeppen

Krouse Testing Machine Co. .... G. N. Krouse

Kwikset Sales & Service Co. .... John Mikitka

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Los Angeles Dept. of Water & Power .... W. W. Pearce

...Continued on page 56



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# METAL SHOW AND CONGRESS

...Continued from page 54

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Lubrication Co. of America .... H. D. Drew

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Malayan Tin Bureau .... W. Henry Lawrence, Jr., Asst. Dir.  
Mall Tool Co. .... R. W. Couffer  
Mallory-Sharon Titanium Corp. .... J. A. Roemer  
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## HERE ARE SOME FACTS about Western industries

WHILE BIG industrial growth resulting from defense contracts has lifted employment to record levels, yet it has its undesirable features. Most of this activity is in the durable goods category, and a recent Department of Commerce study classifies durable goods industries as less stable than non-durable goods.

For example, aircraft and automobiles, machinery, lumber, petroleum, electrical equipment and metal products are listed as highly sensitive to changes in the business cycle.

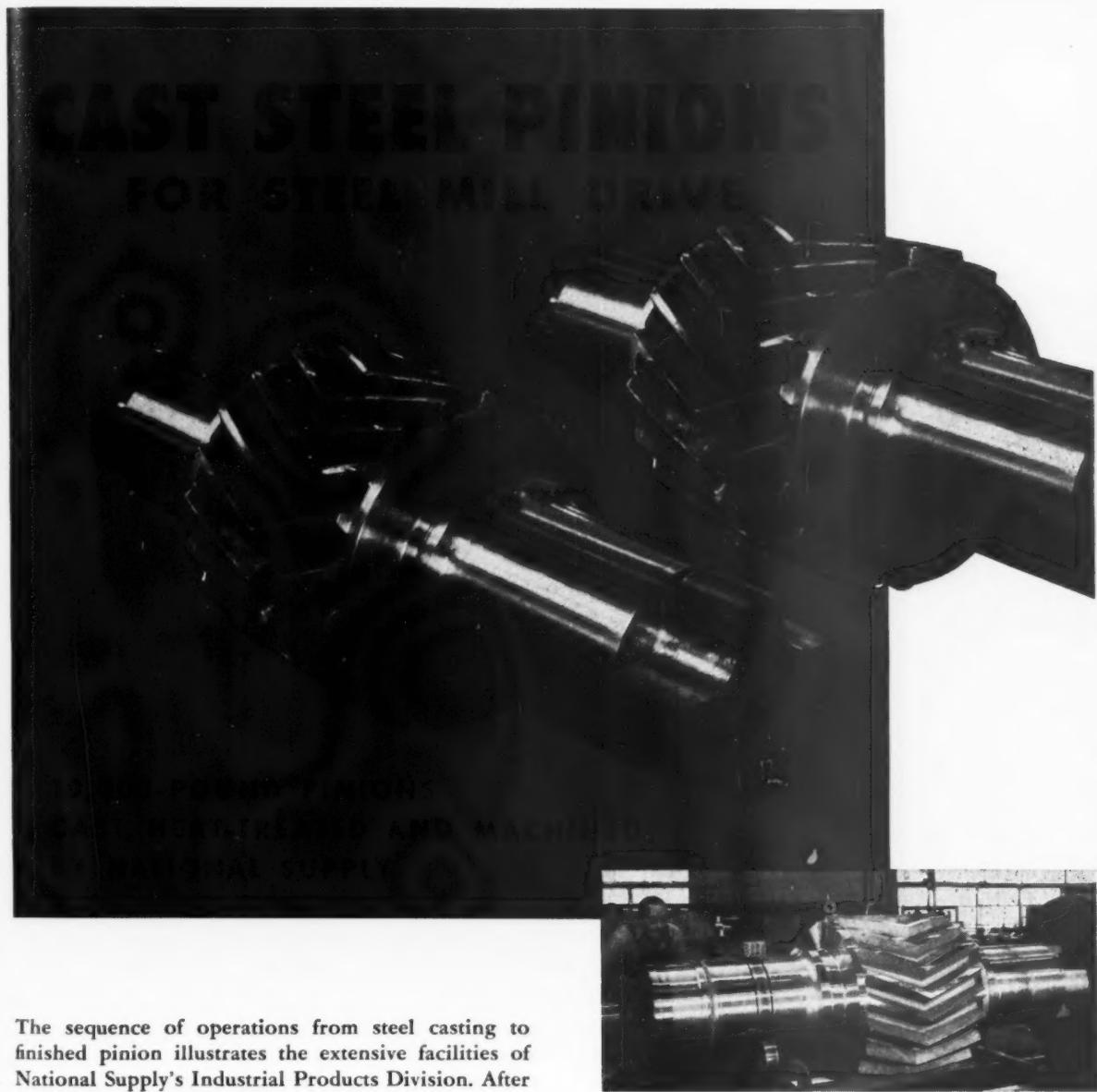
Aircraft and aircraft parts account for two-fifths of the total increase in employment in the Los Angeles area since 1949, and for all of the increase in the San Diego area. Non-durable goods have predominated in the northern California areas, although Stockton changed from non-durable goods leadership in 1949 to durable goods in 1952.

Differences in industrial marketing conditions between the West and the

rest of the country are not easily discerned in statistics. A recent Department of Commerce study, however, does shed some light on the current situation.

A study of the growth and development of the manufacturer's agent shows that in 1948, the year of the last business census covered in the study, the Pacific Coast region, with 9.6 per cent of the nation's population, had 17.7 per cent of the manufacturers' agents, whose sales amounted to 13.6 per cent of the national total.

The three Pacific Coast states had in 1948 a total of 1,601 agents, and sales of \$573,612,000. California ranked second in the nation with 14.9 per cent of the agents, or 1,347, and fourth in sales, with 11.8 per cent, totaling \$497,945,000. Washington had 173 agents and sales of \$50,923,000, and Oregon 81 agents with sales of \$24,744,000. Los Angeles, with 754 agents, ranked third in the nation, and San Francisco fifth.



The sequence of operations from steel casting to finished pinion illustrates the extensive facilities of National Supply's Industrial Products Division. After casting from special analysis steel, and heat-treating to steel mill specifications, these pinions were turned, faced, milled, finish-turned, faced, bevelled, chamfered, grooved and balanced.

These manufacturing steps represent just a few of the capabilities of this conveniently-located western machinery building plant. And, the steel industry is just one of those served by the Industrial Products Division which lists among its customers such other industries as mining, aircraft, naval ordnance, transportation, cement.

This experience and these facilities are so readily accessible to all western industry that the Torrance plant of National Supply is the logical source for cast, forged, welded, and precision-machined parts and assemblies. Why not visit Torrance and determine for yourself how National Supply's Industrial Products Division can help you?

Rough turning steel pinion casting on heavy-duty lathe.



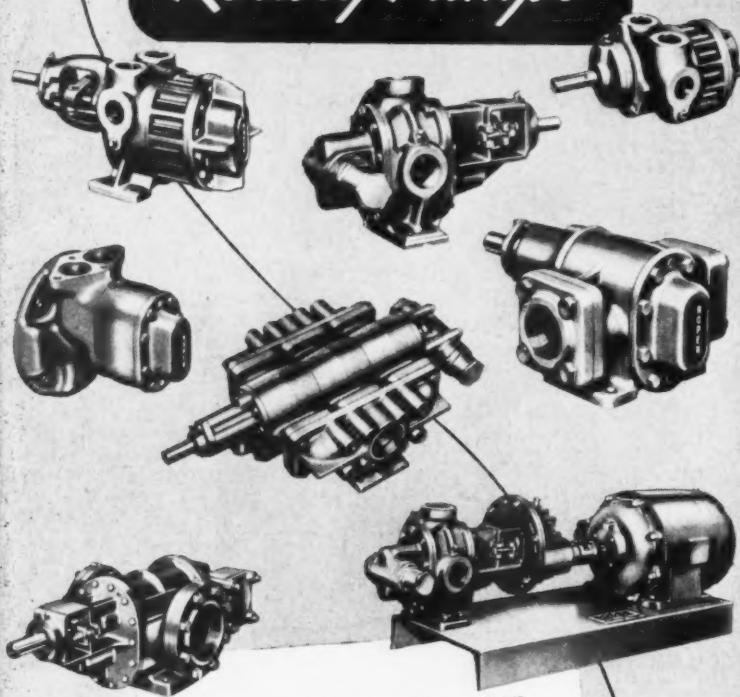
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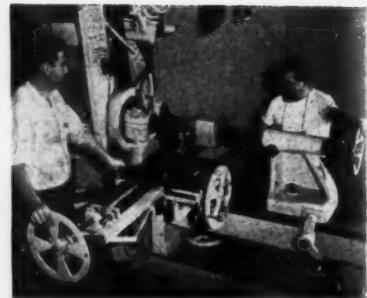
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## BOEING METAL LATHE shows versatility

BOEING Airplane Co., Seattle, has in operation a metal spinning lathe that figuratively turns handsprings. In actuality it comes close to that mark by turning out all sorts of squares, rectangles, hexagons and octagons, not to mention pieces that are flat in one place and round in another.

Invented by Hugh McCoy, a metal spinner at the Boeing plant, device works by a new, relatively inexpensive and rapid process.

### How it works

The McCoy lathe calls for heavy springs which place adjustable pressure upon a roller. The metal to be shaped is held between roller and a spinning block on a lathe. As block and metal turn, roller forms the metal to shape of the block.

Block, made to exact inside dimensions of the part to be shaped, may be made of hardwood, Masonite, Micarta or other suitable material. The metal is first shaped by standard methods and equipment into a round form approximately the diameter of part to be made. It is then slipped over the block, tightly enough so that it binds in several places.

Block and metal are then placed on a lathe which has the roller and springs attached, with the latter holding roller in contact with metal and exerting sufficient pressure to shape it as it turns.

McCoy's device has been used to shape steel, aluminum and other metals.

## MILLWORK STANDARDS

Woodwork Institute of California is getting out a new manual of commercial standards for millwork. This manual, presently being distributed to architects, is the first time this sort of information has been compiled and published as an authoritative handbook of millwork, in California. Woodwork Institute of California is located at 681 Market St., San Francisco.



## Machine tool idea pool

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POLYESTER RESIN being poured on Fiberglas reinforcement at Kimball Manufacturing Corp., San Francisco. Heated platens then are closed and cured for two or three minutes. The product is a decorative tray, alcohol and acid-proof, which will not dent or break when dropped. West Coast has over 100 firms making polyester resin products ranging all the way from safety hats and housing, through pipe and ladders, to radomes.

## NEW TYPE SYNTHETIC RESINS can be stronger than steel

WESTERN FIRMS apparently are somewhat ahead of the rest of the country in the use of polyester resins. These are a new type of synthetic resins which are laminated with fiberglas or other reinforcing substances to provide a material that in some forms is stronger than steel and lighter than aluminum.

Polyesters can be cured to a rigid or semi-rigid solid with relatively low pressures, and can be colored with pigments or filled with cheap inert fillers. By proper choice of resin, physical properties up to 10,000 psi. in tension in the reinforced section can be obtained, and when laminated with fiberglas cloth, ultimate tensile strength over 60,000 psi. can be reached.

Other advantages are superior electrical properties, necessary in the manufacture of radar housings and electrical hats, and corrosion resistance. The latter, according to Chemical Process Co. of Redwood City, California, enable resin-glass combinations to outlast iron in such instances as corrugated building panels or buried conduits or pipe.

A 36-ft. plastic Navy workboat fabricated at Bremerton Navy Yard, featured in the June 1952 issue of *Western Industry*, was made of polyester resin laminated with fiberglas.

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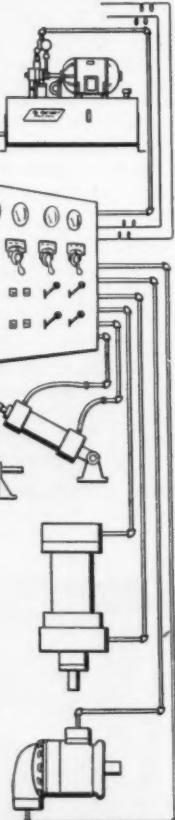
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AD NO. 21



# THE LEARNING CURVE—

For evaluating management decisions, control charts can be based on it to solve crises in business

(Fourth in a Series)

THE FIRST of this series of articles dealt with the characteristics of the Learning Curve itself and indicated that we are not yet taking full advantage of this powerful device. It proceeded to suggest what some of the new uses might be.

The remaining three articles, of which this is the last, deal with specific uses of the learning curve, and offer some examples of particular applications.

In the second it was pointed out that the first level supervisor affects the learning curves of the people whom he supervises, so that analysis of their learning curves furnishes a way for evaluating his work.

The third article dealt with the possibility of analyzing the learning curve of the new employee to determine whether or not he would be likely to become an efficient permanent member of the work-force. This should be done during the "probation" period. It would help to dispose of his case when the employee is the subject of decision as to his permanent status.

The difficulty of interpreting the parameters of the learning curve suggests that other more familiar measures of efficiency be calculated. Two possibilities were suggested: (1) the length of time it will likely take him to attain an arbitrary rate of production, for comparison with other operators, and (2) his total probable production over an arbitrary period, ten years being used in the example cited.

The present discussion deals with a subject that has had less attention than it deserves, the use of trend lines in general and the learning curve in particular as a device for more accurate communication.

It is proposed herein that very effec-



By  
**GLEN E.  
GHORMLEY**  
Applied Statistician  
and Lecturer on  
Quality Control  
at the University of  
Southern California

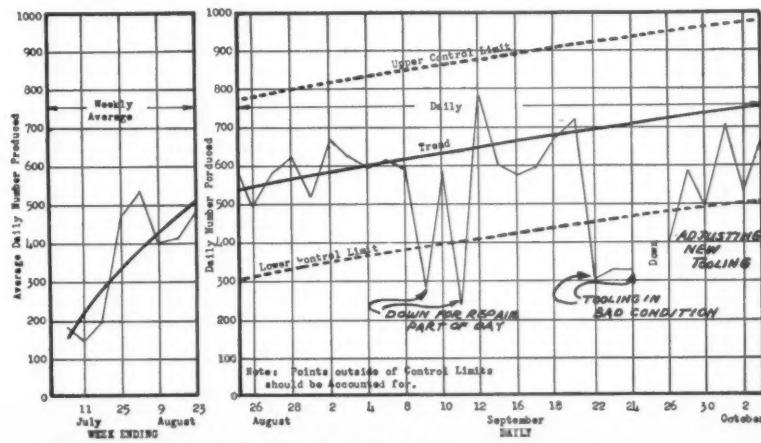
tive managerial control charts can be devised comparable to the Shewhart charts widely employed in quality control, but based on the learning curve trend. In many managerial situations, the learning curve is the appropriate trend line, while the limit curves also follow exponential curves of the same type.

To illustrate the problem and its solution, suppose we examine two of the many crises in the business life of Joe Doakes, a composite of men you and I have seen go into business.

About ten years ago, Joe started in a small machine shop with two employees and a minimum of equipment. He worked on the machines a good deal of the time himself, did his own estimating and bidding, selling and buying, hiring and firing. He was aware of everything that went on in the shop without benefit of much paper-work. He didn't need it. In fact, he was not only in close touch with what are considered general management problems, but with all the details, too.

As his company grew, he was happily aware of more employees, added investment in machines, more raw material inventory and more business. Almost imperceptibly, he withdrew more and more from the actual work on the machines, spending more time in the office and in securing business. He hired a foreman to take his place in the shop as soon as it became apparent that not being on hand to answer shop questions when he was

**CHART I—Learning curve analysis leads to some important decisions about machine production (see discussion, page 64).**



needed was resulting in losing more money than the added salary of the supervisor.

From time to time, there had been problems of sorts, but they either had not been too serious, or they did not seem so, viewed in retrospect. At any rate, the difficulties had not seemed to follow a related recognizable pattern until lately, when he discovered he had on hand an excessive inventory of high-priced raw materials overbought for a special purpose job.

Truth to tell, the mistake had been his own. Eventually, he had disposed of the excess materials at a substantial loss, and, figuratively, sat down to consider what had happened and how it could be prevented in the future.

#### Larger companies need more reports

Joe wasn't without analytical ability. In looking back over recent history, he saw for the first time that many things had been "getting away from him" lately. The result had been material shortage or excess, bad parts produced, idle machinery and employees idle while they were waiting for tools or materials that should have been ready when the job was ready to start.

There had been some bad estimates,

too. He saw that some of this could be prevented, but only if he were better informed and if he gave more attention to systematic planning.

He felt rightly that, while his decisions had been relatively sound as long as they were based on sufficient information, the losses which had resulted recently had been due to the problem of communication—information not reaching him accurately, and decisions not going down into the shop to be carried out exactly as he had intended.

Having set up a new simple system of production control, tool control, materials control and cost control, he rocked along much better for some time. It cost a little money to keep the system going, but the cost was less than that of the mistakes.

His company has been growing; he has had adequate sales and a normal amount of profit. Quite properly, he had been congratulating himself on his new system.

#### New problems

About ten months ago, however, he failed to get a contract he wanted very much, although there was every reason he should have had it. At least, his bid should have been well-informed, since

### SUMMARY

1. Most of the facts of business life are constantly changing. This can be an interesting and challenging concept and a source of considerable profit if our information is good. With the wrong concept, it can be a source of frustration and financial loss.

2. The average or sum is often inappropriate to depict trends.

3. Because the average is static, it is often stale material by the time it is collected and computed. For the cost accountant, the better solution than to try to get fresher and fresher data, is to forecast a few days or a few weeks. The appropriate trend line not only brings us up to date, but is the best available information about the immediate future.

4. As to the usability of a forecast, it will be within usable limits as long as and only as long as the same causes contributing significantly to the trend continue to operate in the same proportions. If those causes change, control lines can be devised to

give early warning of the fact.

5. Observed changes may occur either as a single point or a succession of points. If a single point appears outside the limits suitably determined, we assume that there has been a significant shift with an "assignable cause," but a temporary one; if a succession of points appear outside, we look for a cause or causes producing a permanent trend, or change of trends.

6. Analysis of trends by this technique may be especially fruitful since a discernable change may appear in the effect before the cause can be identified with any degree of certainty, or the probable result of such a change in the cause can be appraised.

7. Where there is more than one cause operating on the same effect, one may seriously obscure the other, leading us to attribute the effect to the wrong cause, and to take the wrong means of correcting it. Utilizing the trend line for analysis may serve to clarify the cause-effect relationship.

he had manufactured the item before and had accumulated what he thought was good cost information.

At first, he was inclined to treat the loss of the contract as an incident normal to business life. After all, many bids are not accepted. He even remarked to his foreman that the successful bidder had taken the contract too low and would lose money.

The anticipated loss seemed not to materialize, however, as far as outward appearances gave indication. The successful bidder was making the product, apparently at a profit, and Joe was human enough to wish he hadn't been quite so positive that his competition had made a bad mistake. Although the loss of this particular contract would not be a fatal blow to his company, he didn't fail to see the danger in either consistently underbidding or consistently overbidding.

This, with other disturbing happenings, led Joe to a serious re-evaluation of his "paper mill." The nagging question he tried to answer was, were his estimates based on little more than guesses? And to the extent that they were guesses, was the uncertainty due to imperfect information or to incorrect methods of processing the information?

He recognized that it is human to make some errors, and they could not all be avoided. Errors based on faulty principles, however, were another matter. Their effect would be cumulative, and the cumulative effect might be serious. So, he wanted to know if there was a basic cause for poor decisions which he was overlooking. Was he continually leaving some elusive factor out of consideration?

#### Following trend lines

Again, as before, Joe decided that there might be a consistent pattern, indicating that a principle was being violated. There were too many small things going wrong. And many of those decisions that were going sour depended on forecasts that did not come off as expected. *Forecasts*, that was the basic problem! He did not ask to be clairvoyant in looking into the future, but he would have liked to improve his batting average, if he could.

Thinking in terms of the need to forecast, he decided that there was a serious but easily overlooked fault remaining in his communication system—a fault that could be repaired. The trouble was, he decided, that, like most reports reaching the manager's desk, his reports were all in the form of sums and averages.

Of necessity, an average or a sum is old stuff by the time the data are col-

lected and an average, by its very character, is a statement descriptive of a static situation. It is powerless to describe a dynamic, changing movement.

While the average is the most generally useful, the commonest and best understood information found on the manager's desk, it does not tell him if the quantities are increasing, decreasing or static, nor how fast the change is taking place, if at all. And what isn't changing? After all, should not every management decision be based on foreknowledge of the direction and speed of change?

Joe installed trend-line reporting in a number of places. As he began to work with them, he began to see something else, that averages had actually been misrepresenting the facts part of the time, that deviations from trend lines were often more appropriate descriptive statistics.

He had to accustom himself to working with trends, but he now likes them. He has discarded some of the ones he started with and added others. In some cases, he returned to the old averages and sums. But his present system has most of the bugs worked out, and is furnishing him with a lot more information than he had, and information of a different kind.

Now, when he has made an important decision, he has learned to watch the pertinent trend line. In this way he can evaluate the effect. Sometimes, he is disappointed to find the trend has not changed. Occasionally, it is made worse. In any case, he feels that he has gained in power to predict.

In all essential features, this is a true story, although Joe is synthetic.

#### Means may have other faults

Another difficulty with using the mean indiscriminately, is that it actually lacks precision in certain circumstances. A second one is that, like many reports, it provides inferior stimulus for the imagination.

In the analysis of a set of data as distinct from presentation, it is often necessary to remove the effect of trends in order to correct the average. This problem is well understood in controlled research experiments. A couple of examples will serve to bring out the point.

Suppose a new material is suggested for a manufacturing process, the new material apparently equal in performance tests to the old one, but easier to work and hence cheaper to process. The Cost Accounting Department and/or the time study man report that it does take less time to manufacture with the new material, whereas a study

... Continued on page 64



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# LEARNING CURVE

Continued from page 63

of the learning curve or other trend study on that particular machine with the same operator reveals that the improvement would have occurred without change of material, due to the learning effect alone.

Both Cost Accounting and the time study man have compared the new average with a too-old one, and have not been aware of trends. Furthermore, they have no device for knowing what is and what is not a significant difference between two means. In other words, it is conceivable that we might come to the wrong decision to change materials, whereas the improvement that we attributed to the new material is due either to the learning effect or an apparent but random and non-significant difference.

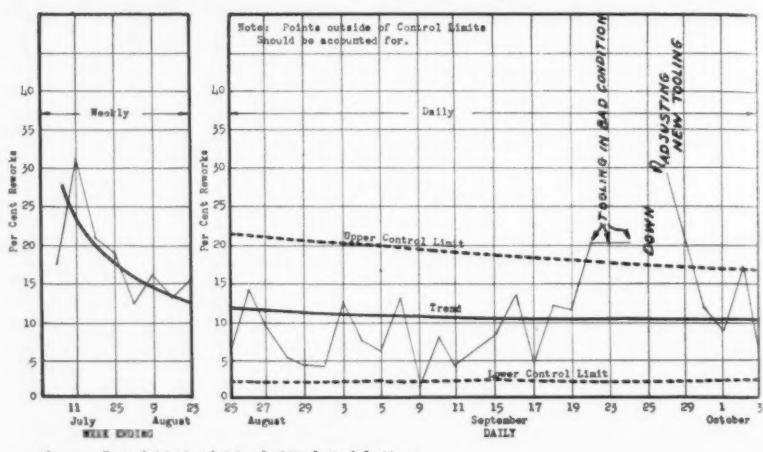
In this case, the true difference between two averages is obscured by the trend.

Again, suppose that, in analysis of sales, we find that a certain territory is producing less than it has before, reversing the accepted effect of experience. On the basis of a superficial analysis, we might conclude too quickly that the salesman in the territory is becoming less effective.

On going deeper into the matter, however, we observe that the bulk of his sales has been of a product that has been falling off all over the trade territory. The fact that the other salesmen have not suffered the same loss of business, is due in part to their good fortune or acuity in pushing commodities that have been in increasing demand.

**CHART II—Learning curve forecasts per cent of reworks and control limits, and shows an extra operation is needed.**

**CHART II—Learning curve forecasts per cent of reworks and control limits, and shows an extra operation is needed.**



Sources: Nycon-Cedekark & Ludwig, Quality Control Section.

The corrective action indicated is to point out the situation to the victim of trends, urging him to push the products that are rising in demand. In this case, in contrast with the one above, the true learning effect is obscured by a bias in the averages.

### A true case

An actual example of use of the learning curve in conjunction with control charts is shown in Charts I, II, and III, controlling, respectively, the quantity of production, per cent of parts having to be reworked, and per cent of parts having to be scrapped.

Machine on which part is made is a 6-spindle Gridley-Acme Automatic. The dimension giving the most trouble quality-wise was a relief diameter for an inside thread. The diameter of the

groove had to be held to fairly close tolerance and there had been serious discussion as to whether or not it could be made economically on the machine in use. This discussion had continued since the machine had been started up the first of July and still continued at the time of the statistical analysis covering the period from July 1 to August 9.

At that time, analysis of the production trend was shown by Chart I to be trending upward at a satisfactory rate, and apparently was due to reach a level of 1,000 per day about November 15; on the present trend, it would reach 1,200 about the end of January or the first part of February. Actually, the average was 1,143 per day in November—a figure that would have been hard to reach without the constant follow-up of Production Control in accounting for points outside of the control limits.

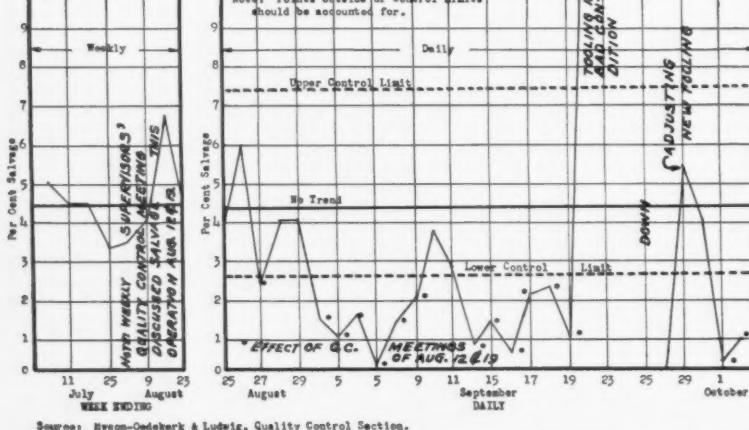
Notice the important management decisions permitted by this trend analysis:

1. To decide to keep the Automatic, no small item of saving;
2. To decide to put on a third shift about November 1;
3. To decide that this third shift would be a temporary expedient—apparently necessary only to January 1;
4. To decide on an outside contractor to start late in December;
5. To know how much would have to be contracted.

### Quality control on trend lines

Chart II shows that the number of reworks were and still are excessive, necessitating an extra operation on an engine lathe for about 10% of the parts. While some improvement could be expected, the forecast promises no eventual disappearance of the prob-

**CHART III—Learning curve forecasts per cent salvage and control limits, and shows fallacy of straight line trends.**



Sources: Nycon-Cedekark & Ludwig, Quality Control Section.

lem. Subsequent history of the operation shows averages of 8.6% in November, 5.8% in December, and 6.5% in January up to the 15th of the month. The control limits provide Quality Control with a basis for deciding which situations have or appear to have "assignable causes" and so should be investigated.

A notable principle is illustrated in this chart: that where a percentage is decreasing, the control limits converge on the central line as the percentage falls. This is in accordance with theory and is borne out in practice.

It will be seen that the four points "out of control" are all logically accounted for. Full explanation of the fact that the machine was permitted to run three days with broken tooling discloses that the replacement tooling was ordered immediately, arriving the third day and was installed on the fourth.

#### Beware the straight line

Chart III presents a still different and an intriguing story.

Up to the time of the analysis, August 9, there had been no significant trend, either upward or downward. The to-date average was appropriate for comparison—4.4%. Averages by weeks since the machine started were 5.1%, 4.5%, 4.5%, 3.4%, 3.5% and 4.1% respectively. None are significantly different from the general average.

On the 12th of August and again on the 19th, the problem of salvage was laid before the weekly supervisors' meeting on Quality Control. The general consensus was that everyone was doing the best he could—that the machine simply would not produce at a better level.

Since this was the general feeling, the trend-forecast was simply laid out into the future without a trend. Beginning with August 25th, however, the per cent salvage began to follow its own learning curve, as clearly borne out in the chart. Happily, the forecast for no improvement proved to be in error.

Only on the four days when the tooling was the cause have points appeared outside the upper limit. On the other hand, points have been out of control limits on the low side with a good deal of regularity. We may assume that the shift is to a new trend line, and a permanent one. In fact, the average for January up to the 15th has been 0.17%! In this case, the learning curve trend developed only after stimulation. One can't but speculate if the trend would have developed at all if the analyst had not been skeptical of straight line trends.



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**PAT. APPLIED FOR**

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Incrustations of practically all types are immediately affected by Evis action. The structural breakdown of scale may occur at unusual speeds—therefore frequent inspections are necessary during initial clean-up. These photographs show the most common shapes and sizes in which scale drops from metal surfaces.

**EVIS IS NOT A SOFTENER**

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## RESEARCH IS THE KEY to industrial survival

"SCIENTIFIC RESEARCH is the key to tomorrow's industrial survival," according to Shirley A. Johnson, Jr., director of the Denver Research Institute at the University of Denver.

Johnson, who has recently completed a study of industrial progress and development, says that nowadays new products are being invented at such a rapid rate that many industries must look to the research laboratory in order to keep abreast of the times and

to avoid being forced out of business. He also explained that the buying public is both fickle and well aware of its needs so that when a new product comes along that supplants an old one, demand for the latter may cease suddenly.

As an example, Johnson indicated that a large share of drug products bought today are research-developed, and though they were virtually unknown several years ago, they have now taken the place of remedies that were formerly accepted as being the standard.

THE WHITE MOTOR CO.'s new Western headquarters at 5th and Brannan Sts., San Francisco is now officially open. New building and surrounding service yards cover close to 100,000 sq. ft. and feature the very latest equipment, including a new dynamometer capable of handling dual drive trucks; a heavy duty frame straightener; aligner; twin post lube rack; and an electronic motor tester. These facilities are available to service all makes of trucks as well as White.



## CORRECTION department

IN THE JANUARY issue, in the feature "Contributions of Western Engineers to the Development of the Industrial West," the paper on air filtration for diesel locomotives incorrectly mentioned A. W. Hardy and B. F. Kline as being connected with California Research Corporation. Mr. Hardy is with Farr Corporation and Mr. Kline with Southern Pacific.

THE FIGURE of \$17,460,000 per year in freight rates paid by Western users of cellophane, reported in the January issue of *Western Industry*, resulted from a typographical error in a Seattle Chamber of Commerce report. The figure should have been \$1,746,000, but even that is now out of date, as new freight rates make the cost today over \$2,000,000.

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## STRUCTURAL STEEL HANDLING expedited with flat tops

FROM NOW ON, hauling and handling of structural steel and pipe is going to be greatly facilitated with "the flat top," a new truck designed and manufactured by Murty Brothers, Portland, Oregon.

Truck's narrow cab, 32 in. wide by 5 ft. long, is set on the left flush "deck" or truckbed with engine installed beneath the flush deck. This makes an additional area 5 ft. wide available for payload and makes side loading and unloading easier and faster.

This new design also makes life more pleasant for the driver. There is now no necessity for him to crawl in and out of his cab window as he did in conventional trucks when steel beams longer than the truckbed were loaded with forward ends extending beyond door of cab.

Both 4-wheel and 6-wheel models will be built. The 4-wheel model has a 10-ton capacity with 185 sq. ft. of deck. The 30-ft. long, 6-wheel model offers 225 sq. ft. of deck.

First model flat top was delivered to Rudie Wilhelm Warehouse Co. for use by United States Steel Co.

## NEW OREGON INDUSTRY in bark by-products

POSSIBILITY exists that Oregon may soon acquire a new industry, including new plants, using Oregon raw materials and based on an Oregon state-owned patent.

An option contract, covering the Kurth bark extraction process developed by Dr. E. F. Kurth of Oregon Forest Products Laboratory, was signed last June by Governor Douglas McKay for the Oregon State Board of Forestry, and by officials of M. W. Kellogg Co., Jersey City, N. J. A similar contract was subsequently signed by Canadian Forest Products, Ltd., Vancouver, B. C., for Canadian rights.

Process covers extraction of wax, tannin, and other valuable chemicals from the bark of Western species; Douglas fir bark, however, will receive primary attention.

Option agreement covers an eight-month period of investigation, which may be followed by an exclusive production contract for five years. All factors being equal, Kellogg Co. agree to use new materials from Oregon and to locate plants, if and when built, in Oregon.

According to Paul M. Dunn, dean of Oregon State College school of forestry and director of the laboratory, this will be the first time a license will have been issued to practice under an Oregon state-owned patent.



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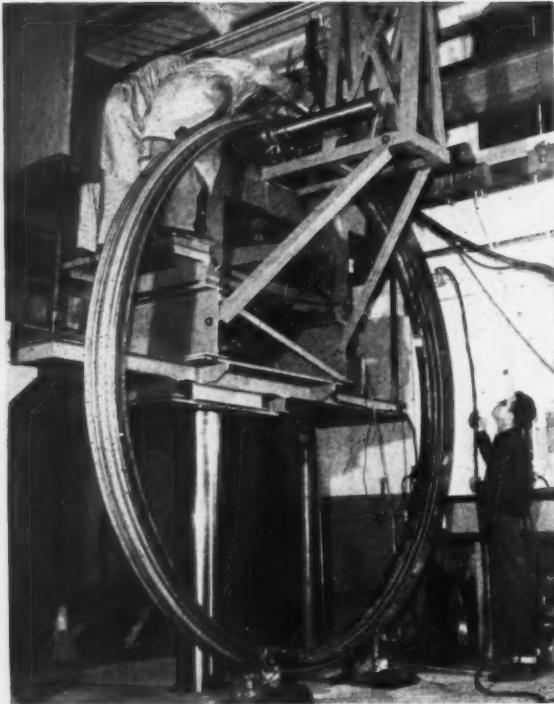
★ This new improved Spiral reams burr from pipe as fast and cleanly as if it were wax . . . and makes quick work of enlarging conduit box outlets or cutting holes in sheet metal—and does it without chatter.

★ Improved ratchet handle—cutting edges of heat-treated tool steel for long service. You can't beat it for performance. Buy at your Supply House.

Remember also RIDGID LonGrip Reamer with extra-long taper.

THE RIDGE TOOL COMPANY • ELYRIA, OHIO





UNUSUAL METAL fabrication problems are encountered in making huge industrial expansion joints. To weld assemblies successfully a hydraulic hoist was built to position the 10 ft. diameter bellows for welding.

***Tough welding problem  
licked by Western skill  
and design ability***

ALL GOING TO SHOW that industry, and concurrently, industrial equipment, is growing bigger and bigger—the largest expansion joints ever made for a gas turbine power plant—huge metal bellows that allow large industrial components to expand and contract—are being built by Solar Aircraft Co.

The firm has already completed 22 of the expansion joints, each having an inside diameter of 122 inches—more than 10 ft. They are being built both for American Locomotive Co. and the Lummus Co., who are incorporating them in components of General Electric 5,000-hp. stationary gas turbine power plants and booster stations.

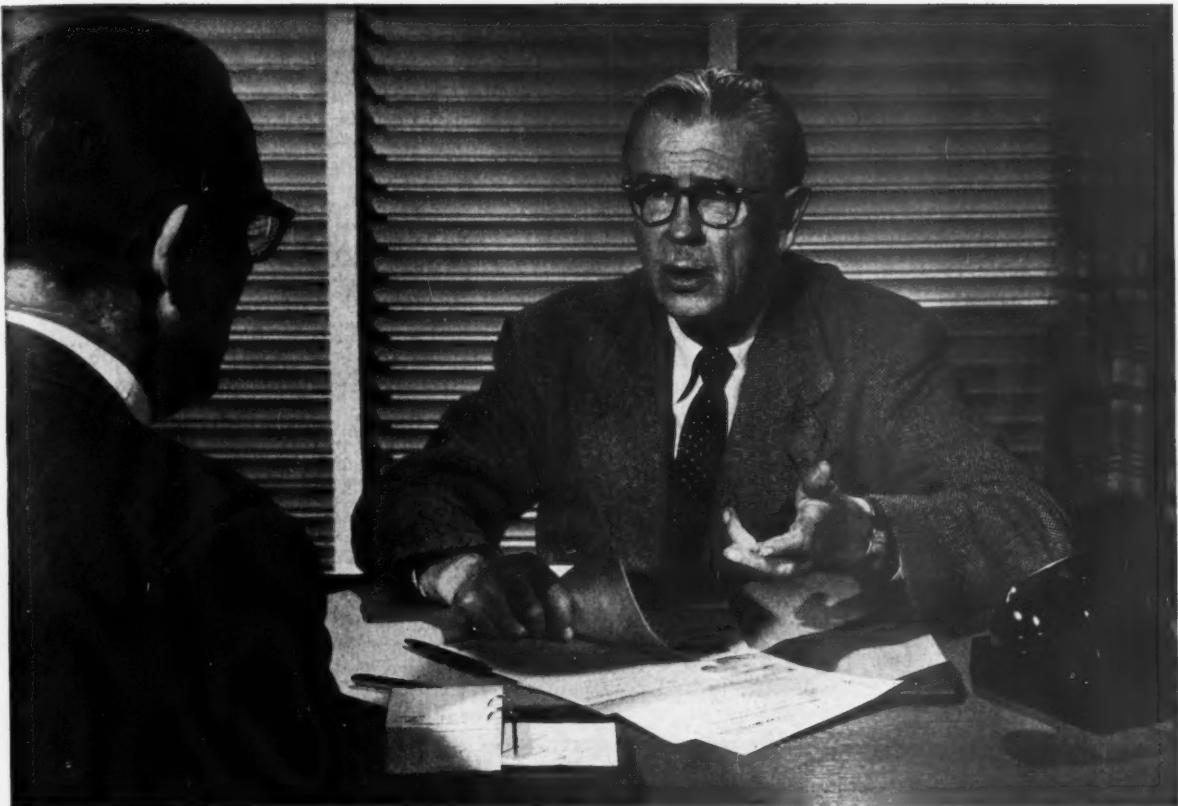
Each of the expansion joints, used to accommodate thermal expansion in waste heat boilers and regenerators, has three convolutions forming a leakproof joint but "giving" when the sections they connect expand or contract with temperature changes. The convolutions are made of .140 inch thick type 321 stainless steel, and are attached to standard carbon steel or low alloy steel weld ends. The expansion joints are fabricated in accordance with ASME code requirements for unfired pressure vessels.

Complete gas turbine units are used both in the petroleum industry and by public utilities. Solar's expansion joints are believed to be the largest yet used by these industries; their size is exceeded only by special joints built for large wind tunnels.

**BIG BELLows  
for  
gas turbine  
power plant**



THIS EXPANSION joint, made for a gas turbine power plant, allows large industrial components to expand and contract easily with changes in the temperature.



## "You people make lots of sheet steel— where's it all going?"

Yes, Mr. Buyer, our industry *is* turning out lots of sheet steel. But, now, at just the time when civilian needs for sheets are greater than ever, defense needs are great, too. So, a lot of sheet steel that normally would go into civilian channels must be used instead for military aircraft and trucks . . . warships . . . military fuel and lubricant containers . . . and for hundreds of other defense requirements.

Columbia-Geneva is running its mills at top capacity to help overcome the shortage of sheet steel for civilian needs, but still cannot fill all orders. It is hoped, though, that later this year we can supply a much greater tonnage to our civilian customers.

In the meantime, please remember that—no

matter what the supply situation—Columbia-Geneva sheets remain unchanged in their high quality. From raw ore to finished product, sheet quality is rigidly controlled by metallurgists and other trained technical personnel using the most advanced testing methods; from start to finish Columbia-Geneva sheets are produced in the most modern mills, in strategic Pacific Coast locations; at every step of the way they are designed to meet your most exacting specifications.

That's why sheet steel from Columbia-Geneva is always your best buy, and—as defense orders are filled—more of it will become available for civilian use.

### U·S·S Steel Sheets

**COLUMBIA-GENEVA STEEL**

*Division United States Steel Corporation, San Francisco*



**UNITED STATES STEEL**

## SAFETY AWARDS for plants

SOLAR AIRCRAFT Co., San Diego; Vulcan Steel Foundry Co., Oakland; and Atlas Foundry & Machine Co., Tacoma, Washington, are winners of highest awards for safety in a recent competition held by Steel Founders' Society of America.

With 134 steel foundries participating nationally, a total of 37 foundries including Hanford Foundry Co., San Bernardino, The National Supply Co., Torrance, Calif., and Sumner Iron Works, Everett, Washington, qualified for awards during the competition.

These safety records, as determined by American Standards Association, are decided gains in steel foundry practices.

## FERTILIZER MARKET on the increase

Fertilizer materials market is constantly expanding. In California, the trend is continuing sharply upward, and on a solid basis. For example, there were 639,607 tons of commercial fertilizer sold in California in 1950, and 731,400 tons sold in 1951. Within a few years this could—and quite probably may—approach one million.

## FURNITURE AND BEDDING shipment totals

Household furniture and bedding products value of shipment, by type of product, 1950

(Figures in thousands of dollars)  
(from Bureau of Census)

Product	Total 1949	Mountain	Pacific
Total all household furniture and bedding products	\$1,613,874	\$10,830	\$182,372
Upholstered furniture	408,764	4,343	56,770
Suites and individual sofas, chairs, ottomans, etc.	327,660	2,688	39,598
Sofa-beds, studios, and other dual-purpose pieces	81,104	1,655	17,172
Non-upholstered furniture	960,599	1,478	88,020
Wood	726,948	†	58,720
Metal	221,824	†	28,610
Other	11,827	...	†
Living room furniture (except radio, phonograph, and television cabinets)	236,682	†	7,525
Wood	222,773	†	7,371
Metal	12,919	...	†
Other	990	...	†
Bedroom furniture (except metal beds and cots)	292,173	†	25,073
Wood	287,512	†	24,533
Metal	2,388	...	†
Other	2,273	...	†
Dining room and junior dining room furniture	100,852	†	10,581
Wood	* 100,852	†	10,478
Dinette and breakfast sets	105,630	†	19,453
Wood	18,033	†	†
Metal	84,852	†	19,165
Other	2,745	...	†
Kitchen furniture	95,583	...	†
Wood	30,672	...	†
Metal	64,595	...	†
Infants' and children's furniture	49,170	...	2,510
Wood	40,982	...	2,274
Metal	6,097	...	†
Other	2,091	...	†

\* Insignificant quantity reported as metal and other, and included in total for wood.

† Withheld to avoid disclosing figures for individual companies.

‡ Suppressed because standard error of estimate exceeds 15%.

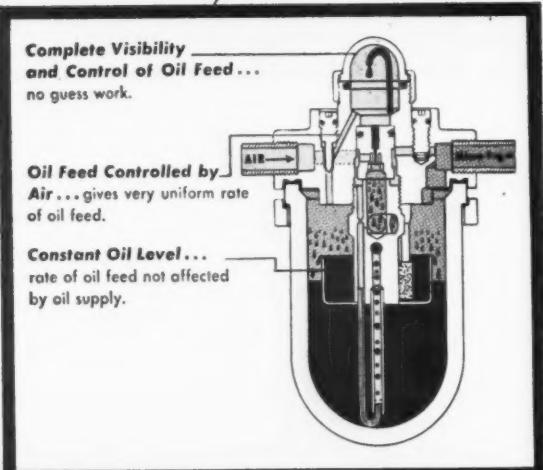
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## BEDDING PRODUCTS facts and figures

Bedding products quantity and value of shipments, by product, by geographic division and state, 1950

(Quantity and dollar figures in thousands)

Total value  
of shipments..... Colo. Ariz. Pacific Calif.

3,071 1,079 37,582 33,703

### Innerspring mattresses

Quantity (thous- ands of units)	104	29	861	765
Value of ship- ments.....	2,143	626	20,328	18,392

### All other mat- tresses and pads

Quantity (thous- ands of units)	23	*	232	196
Value of ship- ments.....	294	*	2,650	2,255

### Box Springs

Quantity (thous- ands of units)	21	18	592	490
Value of ship- ments.....	488	408	12,792	11,368

### Coil Springs

Quantity (thous- ands of units)	*	*	*	*
Value of ship- ments.....	*	*	*	*

### Flat Springs

Quantity (thous- ands of units)	...	†	*
Value of ship- ments.....	...	†	*

### Hollywood bed headboards

Quantity (thous- ands of units)	*	*	*	35
Value of ship- ments.....	*	*	*	374

(Other bedding products not reported.) (New Mexico and Arizona figures not shown to avoid disclosing individual company output.)

\*Withheld to avoid disclosing figures for individual companies.

†Suppressed because standard error of estimate exceeds 15% for either quantity or value of shipments.

## SCHOLARSHIP for engineers

HYDRO-AIRE, Inc., manufacturer of aircraft accessories, Burbank, California, is granting an undergraduate scholarship for engineering students at the University of California at Los Angeles. The scholarship is being offered as part of an arrangement between the School of Engineering and the firm, allowing UCLA undergraduates to supplement their engineering education with practical experience in the research and engineering departments of the firm. The scholarship will begin in the spring semester with a junior engineering student. Details of the program are being discussed by firm members and University officials.



## How **P.I.E.** solved a 24-hour-a-day materials handling problem

Like officials in other industries, executives of Pacific Intermountain Express know that efficient materials handling methods often save as much as 25% of *overall* operating costs. They know also that excessive downtime of fork trucks could wipe out the savings of their new streamlined 24-hour freight dock schedules — no matter how efficient the system.

Consequently, before selecting this equipment they made a thorough study of all the industrial fork trucks available. Mr. C. G. Zwingle, Vice-President of P.I.E. reports, "We selected 59's because they meet all the rugged requirements of our 24-hour dock schedules with greater dependability and minimum time-out for routine maintenance and inspection."

Lewis-Shepard Spacemaster Trucks are designed to reduce materials handling costs in every industry . . . designed also to slash your truck maintenance and operating costs, and give you the faster, full load operation your job requires.

**LEWIS-SHEPARD ELECTRIC FORK TRUCKS** prove their dependability. Here are some current reorders from blue chip companies in a variety of industries:

Cold Storage.....	had 17 — reordered 2
Textile Fabrication.....	had 4 — reordered 3
Chemical Mfg. ....	had 8 — reordered 3
Paper Mfg. ....	had 26 — reordered 4
Elec. Equipment.....	had 37 — reordered 5
Aviation.....	had 5 — reordered 1
Brewery.....	had 6 — reordered 2
Food Chain.....	had 44 — reordered 7

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Nationwide Service — See "Trucks, Industrial"  
in your Yellow Phone Book



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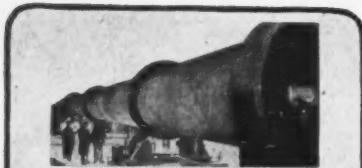
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LUBRICANTS WILL IMPROVE  
ITS OPERATION AND REDUCE  
MAINTENANCE COSTS.**



## HOW TO FIGURE CAPITAL ASSETS SALES IN YOUR INCOME TAX

*There are dangers in selling your business for a lump sum*

SEVERAL CHANGES in rules governing the sale of capital assets were incorporated into the Revenue Act of 1951 and are now effective on the 1952 income tax return.

The Internal Revenue holds there are three kinds of property an individual may sell, (1) capital assets; (2) non-capital or ordinary assets; (3) assets which may be either capital or non-capital, depending upon circumstances.

Generally, a capital asset is any property held by the taxpayer and not used in his trade or business. Non-capital assets are stock in trade, property that must be included in inventory, goods held for sale, property subject to depreciation used in business, real property used in business, a copyright or similar property held by the creator of such property, and certain short-term discount federal, state and municipal obligations.

In the following examples, property may be either a capital or non-capital asset:

Stocks and bonds are not capital assets when held for sale by a securities broker. They are capital assets when held by an individual. A truck used in business is not a capital asset. An automobile used for pleasure is a capital asset.

In selling capital assets, they must, on the income tax return, be classified as either short-term or long-term gains or losses.

Sales of any capital asset held less than six months are "short-term"; if held longer than six months, gain or loss is long-term.

In computing net gain or loss to be taken on the tax return, the new method to follow is this:

Short-term gains and losses are merged to obtain net short-term gain or loss.

Long-term losses are similarly merged. They are taken into account at 100 per cent in computing gross income.

In the next computation, the taxpayer either gains or loses by the new rules. Generally, he gains, especially in the matter of long-term losses.

1. If the net short-term gain exceeds net long-term capital loss, take 100 per cent of the gain and include it as income (the taxpayer gains when compared to the former method).



By  
**GLENN  
GRAVES**

Formerly served with the Bureau of Internal Revenue, No. Calif. Dist., as Chief of Public Relations, and now with Graves and McMahon, Tax Consultants and Public Accountants, San Francisco, California

2. If the net long-term gain exceeds net short-term capital loss, use only 50 per cent of the excess in computing adjusted gross income (the taxpayer loses).

3. If sale of only one capital asset made during the year results in a long-term capital gain, only 50 per cent may be included in adjusted gross income (no gain or loss).

4. If sale of a capital asset results in a short-term gain or loss, account for 100 per cent (no gain or loss).

5. If the sale of one capital asset results in a long- or short-term loss, the loss is taken into account at 100 per cent (gains on long-term).

However, such losses are to be taken into account only to the extent of the amount of adjusted gross income for the year, or \$1,000, whichever is smaller.

For example: a taxpayer may have an adjusted gross income of only \$900 for the year, and have a \$1,800 loss from sale of a capital asset. Only \$900 would be taken into account. The remaining \$900 would be carried forward as a "carry-over" loss on next year's income tax return.

A maximum of \$1,000 is allowable as a capital loss deduction on any one income tax return.

However, married couples residing in a community property state, may, by filing separate returns, each claim a maximum capital asset loss of \$1,000 on their return. This does not apply in non-community property states.

Personal property is a capital asset. Profits on the sales of such items are considered taxable income and must be reported as capital gain.

However, losses sustained from sale of such property cannot be claimed as deductible loss. The Internal Revenue Bureau holds that personal property, such as furniture, television sets, radios and other items of a similar nature are

not (1) business assets, and (2) such property was not obtained for profit. The conclusion is that while gains must be reported, losses cannot be claimed.

Each year thousands of "going business" firms are sold. Careful study of the tax laws should be made before entering into an agreement to dispose of a going business.

The selling price of the business to realize profit is not the only item for consideration. The wise businessman will carefully determine how the complex capital gains and losses rule will affect his income tax liability. How to proceed to effect the greatest tax saving is of major importance in the sale of any business.

In selling any business at a profit, it is wise not to sell at a "lump sum" price, but divide the business into a sale of component parts, such as merchandise, cash receivables, fixtures, goodwill, and other items used in the business.

In the sale of a business for a "lump sum" figure, the whole amount of the profit is taxable income. This profit may be taxable on one year's income tax return, or may be prorated as an installment sale.

To insure an installment sale, a method of prorating profits of the sale until final payment is made, not more than 30 per cent of total selling price can be received by the seller in the year of sale. If more than 30 per cent is received, the entire amount of profit must be taken into account on one year's income tax return.

Perhaps the best method to follow in selling a going business is to divide the sale into component parts. This permits the seller to take advantage of capital gains rules.

Under this method, some items, such as goodwill, are treated as capital gain, and if held longer than six months, only 50 per cent of such gain is taxable.

Following this procedure, the seller of a going business realizes the lowest possible tax payment. However, it is wise not only to consult an attorney but a qualified tax consultant, as well, before entering into such a sale.

In fact, before entering into any business deal, a visit to an expert tax consultant may be profitable from a tax standpoint.

Present income tax laws will prevail on all 1952 income tax returns. The proposed 1953 Revenue Act will, if passed, slightly lower taxes, but not sufficiently to make material difference; hence, careful tax planning is highly essential for all business operations.

## "HAZARD ELIMINATED"

Another example of  
positive  
**protection**  
**in transit**  
with the



## STANLEY STEEL STRAPPING SYSTEM

**Product lost — everything ruined** was the report when the tops of pails containing an "antiquing" liquid came off during shipment from Endicott-Johnson's Chemical Dept. in Endicott, N. Y.

**Simple, foolproof solution** was found by banding the tops to the pails with Stanley Steel Strapping.

**You'll find many ways** in which the Stanley Steel Strapping System can protect shipments, speed shipments and lower costs. For example, it is a fast, economical way to prepare floating loads. It saves man hours and materials in packaging or making up unit loads . . . facilitates loading and unloading . . . prevents pilferage.



**Let this expert help you.** The Stanley Man is a specialist in Steel Strapping and Car Banding Systems. He'll be glad to study your materials handling methods, to suggest improvements without obligation. Just mail the coupon below. Branch offices or Representatives in 32 principal cities.

### Invite the Stanley Man to Call

The Stanley Works, Steel Strapping Division  
215 Lake Street, New Britain, Conn.

Please have your Representative show me how the Stanley Steel Strapping System can speed materials handling, and lower costs.

Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Street \_\_\_\_\_

City and State \_\_\_\_\_

**STANLEY**

Reg. U. S. Pat. Off.

Hardware • Tools • Electric Tools  
Steel Strapping • Steel

Seattle Office • San Francisco Office  
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Los Angeles: 108 W. 6th St.

# For Dependable Pump Replacements!

GET THIS HELPFUL  
NEW GUIDE  
TO SMALL  
INDUSTRIAL PUMPS



The new Tuthill Catalog No. 101 on the Model L series of pumps presents the information you need to help you in selecting the right pumps for

replacements on your equipment. It includes a special Pump Guide on Model L applications, plus complete specifications and performance data. Write for your copy of Catalog No. 101 today.



*Tuthill Model L Pumps are designed for  
LUBRICATING, HYDRAULIC, TRANSFER,  
CIRCULATING and BURNING OILS SERVICE.*

**TUTHILL PUMP COMPANY**

Dependable Pumps since 1927

939 East 95th Street, Chicago 19, Ill.



## EVENING ENGINEER classes offered

TWO COURSES will be offered by the Division of Mechanical Engineering of the University of California, Berkeley, for graduate credit. Industrial Heat Transfer, M.E. 151, and Vacuum Systems Design, M.E. 298-4 will be offered two evenings a week from 7:30-9 p. m., commencing Tuesday, February 17, 1953. Information concerning class schedules, enrollments, etc., may be obtained by contacting the Division of Mechanical Engineering, Ashberry 3-6000, local 433 and 435.

Last year 2,900 enrollments were received for the more than 160 Engineering Extension classes offered in the Bay Area. Several business firms and government establishments made special arrangements with the University for evening or on-the-job training in engineering subjects.

Among the 62 Engineering Extension classes being offered this spring are several new to the program.

*Administration of the Engineering Function.* 802G

Planning and scheduling of engineering procurement and construction.

*Principles of Distillation.* 148AB

Concepts leading to an understanding of distillation operations.

*Design of Dams.* 812AB

Economic, legal and technical preparation. Design, construction and maintenance, principles and methods.

*Aircraft Electric Power Systems.*

861AB

AC and DC systems. Power generation, regulation and protection in aircraft.

Announcements of classes and additional information are available at the office of University Extension on the campus or in San Francisco.

## WOOD UTILIZATION problems studied

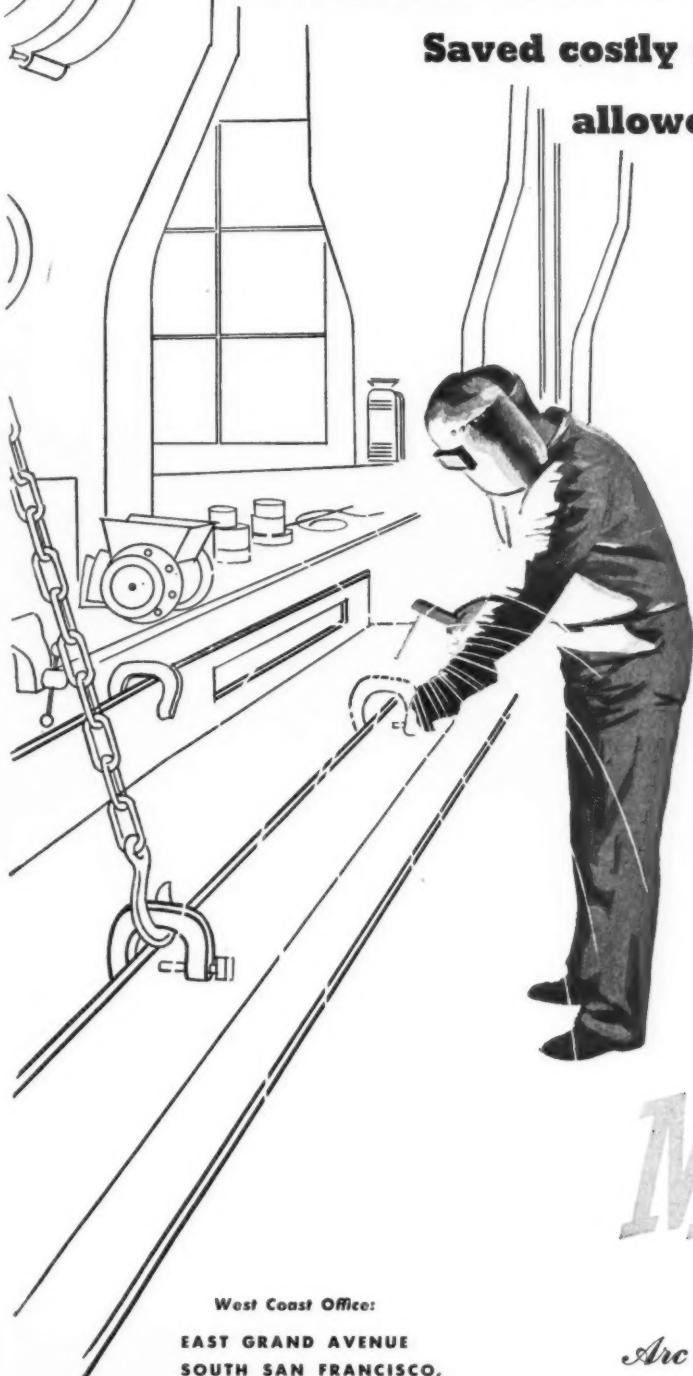
A NEW UTILIZATION Committee is being added to the Redwood Region Conservation Council to study wood utilization problems in the region and to strive to develop new markets for waste products. T. T. Stoleson, general manager of Mutual Plywood Corp., Eureka, has been named chairman of the new committee.



## BUTTERING WAS THE ANSWER!

**Saved costly casting . . .**

**allowed use of low cost rods**



Need for complete re-making of a large, costly composite machine frame threatened a prominent Western mining equipment builder. Weld metal was picking up harmful impurities from the cast part—it was impossible to obtain satisfactory welds using the electrodes specified.

The local M&T salesman joined with company welding engineers . . . experimented . . . and sparked a solution! On his advice surfaces of the casting where welding was required were simply "buttered" with Murex Type HTS before the bulk of the weld metal was deposited.

**Results were:** complete elimination of pickup so that remaking of the casting to new metallurgical specifications became unnecessary. And, the specified electrodes, on hand for the job, could be used.

Your nearby M&T representative is qualified to give you expert assistance on any welding problem. Call on him when you need help. Make use of his broad background of experience in every phase of welding.

# MUREX®

*Electrodes*

*Arc Welders • Accessories*

West Coast Office:

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SOUTH SAN FRANCISCO,  
CALIFORNIA

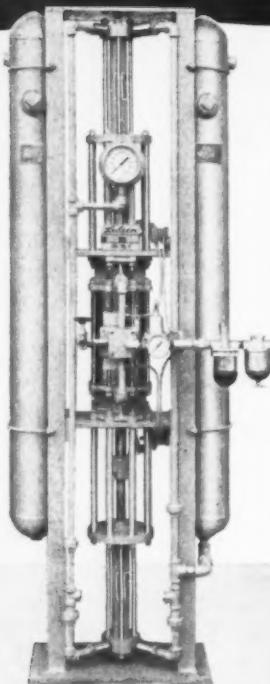


METAL & THERMIT CORPORATION

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# Ledeen PUMPS



## HIGH PRESSURE OIL from LOW PRESSURE AIR

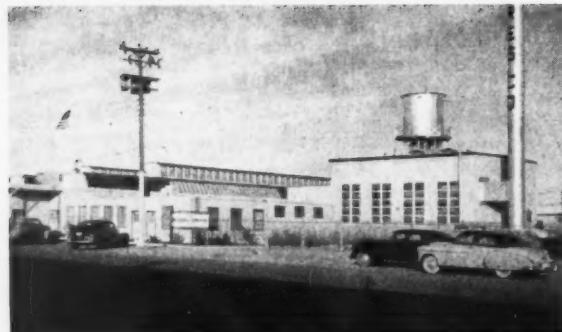
Ledeen Heavy Duty Pumps and Power Units are built for operation of clamps, valve actuators, forming or drawing presses, safety installations, high pressure testing and other hydraulic circuits requiring adjustable pressure and volume and long pressure holding cycles, without overheating the oil. Built as a complete package power unit, ready for easy installation, requiring connections only to incoming air line and outgoing hydraulic lines. Available in horizontal construction for minimum head room, and vertical construction for minimum floor space. Simple to install. Inexpensive to operate.

Write for Bulletin 4000

VALVES • CYLINDERS  
AIR-HYDRAULIC PUMPS & BOOSTERS  
VALVE ACTUATORS • AIR HOISTS

*Ledeen Mfg. Co.*

1600 So. San Pedro  
Los Angeles 15, Calif.



Hosdreg Manufacturing Company plant at Deming, New Mexico.

## SMALL TOWNS CAN GET BIG CONTRACTS

**Citizens of Deming, New Mexico, corral a defense industry by heads-up teamwork**

DEMING, a town of 7,200 population in southwestern New Mexico, is believed to be one of the few communities in the United States that have promoted and obtained a million-dollar defense manufacturing industry entirely through united local efforts.

The Hosdreg Company, Inc., started turning out 20 millimeter shells for the U. S. Navy at Deming October 1, 1952, a year and a half after the campaign to get the plant started. The initial contract for \$1,000,000 is to be completed in one year. Other Navy contracts for shells are a possibility in the future, and in addition, Army officials have expressed interest in a special type of air-compressor which the firm designed and presented.

The whole thing started when town leaders, in an ambitious moment, took over a U. S. Air Force training base that was declared surplus at the close of World War II. There were a number of warehouses, office and utility buildings on the base and it looked like a good site for some large manufacturing company at a time when building materials were expensive and hard to get.

But in the next few years the Deming boosters found that industry wants more than a place to light. Several large corporations looked it over and decided against it.

Finally, R. J. Hodson, formerly with the Hosdreg Manufacturing Company at Huntington, Indiana, became interested. The Hosdreg Company had produced shells for the Navy during World War I.

A corporation was set up with Hodson as president and Walter Measday, one of the Deming boosters, as vice president. The two were sent to Washington to line up a defense contract. Before they got it they spent a full year and \$30,000 of Deming money. Having gone that far, the local business men raised another \$60,000 for operations until production began. This won the approval of the Small Defense Plant Administration and an RFC loan came through to put the company into production. The Navy furnished precision tooling machines.

At an open house celebration of "Navy Production Day" at the plant in October, Capt. Carl J. Lamb, representing the Navy, said that of all the plants producing 20 mm. shells, Hosdreg is the only one located outside of a large industrial center. He said the Deming location is favorable to the national defense program. The plant is housed in a remodeled laundry.

Property, equipment and facilities, valued at \$1,250,000 were sold by the town to the corporation for 98% of its stock. The contract stipulates that when the manufacturing payroll reaches \$750,000 the town will consider itself paid off. Initial payroll is between \$4,000 and \$5,000 per week.

A number of other small communities have been inquiring how Deming did it. President Hodson, of Hosdreg, tells them that it took a lot of local teamwork, some hard cash and the cooperation of New Mexico's two senators, Clinton P. Anderson and Dennis Chavez, whose knowledge of who to see in Washington was invaluable.



## *“...On the feet of Individuals.”*

**S**ociety advances on the feet of individuals. We Americans live under the highest standard ever achieved because we believe in and are permitted currently to practice three of the cardinal principles of progress—Invention, Research and COMPETITION.

Nineteen basic inventions influence our pattern of life today. Each one was created to satisfy a fundamental need for improvement—a modern means of competing as against outmoded procedure. Each one, such as the electric light, the telegraph, the amplifying tube, the induction motor, created a new industry in which numerous companies strove in free competition for the maximum share of business.

For example, since Thomas Edison invented the incandescent filament lamp in 1880, the electric light industry has grown to an annual volume of \$501,500,000 in light bulbs alone; in May, 1906 the Wright Brothers received the patent for their flying machine; the value of aviation manufactures in 1951 in the United States alone was estimated at \$3,350,000,000 and in February, 1952, records show a \$10½ billion backlog of orders.

More rapid still is the growth of the radio-television industry which today produces some \$230 million worth of home radio sets and \$1,570,800,000 in television sets. In every case, employment and sales volume grew enormously and the public enjoyed huge personal benefits.

Side by side with Invention came Research, exemplified by the competition of intelligent men questing for new materials, new methods, new processes, new scientific truths. Current advertisements tell of hundred-year tests to assure bet-

ter materials for the future, technology that produces metals to withstand almost inconceivable heat, machines calculating 20,000 times faster than the mind of man, medicines that cure “incurable” diseases, food processes that cook, sterilize and pack hundreds of cans a minute. And in every case, the public enjoys huge personal benefits.

This is what James A. Decker undoubtedly had in mind when he wrote the line, “Society advances on the feet of individuals.” These “individuals” are you and I, all our countrymen, benefiting every day from Invention, Research—and from COMPETITION.

Developing inventions, marketing products, and pursuing scientific research require substantial investments. A grave danger to their future now looms. In 1951, corporation net profits suffered a loss of 21% over the previous year. The reason—taxes too high, government controls and policies that interfere too greatly with private industry. If this continues, financial resources will dwindle, competition will be stifled.

Without free competition, American progress stops. No country can long exist when its government calls all the shots. We need competition to assure progress for people.

★ ★ ★

*This report on PROGRESS-FOR-PEOPLE is published by this magazine in cooperation with National Business Publications, Inc., as a public service. This material, including illustrations, may be used, with or without credit, in plant city advertisements, employee publications, house organs, speeches, or in any other manner.*

**THE COMPETITIVE SYSTEM DELIVERS THE MOST TO THE GREATEST NUMBER OF PEOPLE**

# BOOKS FOR INDUSTRY

## WORKABLE INFO ON materials handling equipment

"Handbook of Manual Materials Handling Equipment" is designed to acquaint both industry and laymen with terminology and fundamentals of casters, wheels, hand and floor trucks, pallets and skids. Besides a working knowledge of manual materials handling equipment, the reader, by applying principles outlined in the text, should be able to effect considerable cost savings in movement of materials. Handbook sells for \$1.00 and is available to associations, user societies and institutions at quantity discounts. Comes from *The Caster and Floor Truck Manufacturers' Association*, 27 E. Monroe St., Chicago 3.

## PRACTICAL IDEAS for using hydraulic, hand tools

*Blackhawk Mfg. Co.*, Milwaukee 1, Wisc., puts out a new "Idea" book, "1001 Valuable Shortcuts with Hy-

draulic Tools and Hand Tools." A brief run-down of the "Idea" index shows: ideas for production, maintenance, testing, and rescue work with hydraulic tools; ideas with wrenches; ideas with torque wrenches. Available through any Blackhawk distributor, book costs \$1.00.

## BETTER TRAINING through motion pictures

A joint Army-Navy research study, pointing the way to achievement of better training through motion pictures, is described in a report intended as a guide for those who plan, prepare, and use films. Book will aid in: (1) predicting results of film instruction more accurately; (2) improving the planning and production of instructional films; and (3) increasing effectiveness of film utilization procedures. Address orders for PB 111000, "Instructional Film Research," 1918-1950, to Office of Technical Services.

U. S. Department of Commerce, Washington 25, D. C. Payment of \$2.50 payable by check or money order to Treasurer of the United States.

## "WATER TREATMENT FOR INDUSTRIAL AND OTHER USES"

This book by Eskel Nordel is the most comprehensive and useful work which has yet appeared in this field. It deals with the impurities found in industrial water supplies, and a great variety of treatments for correction, according to Ray W. Hawksley, chemical engineer, San Francisco, reviewer.

Water requirements in terms of quantity and quality are given for a large number of industries, and the treatment of boiler feedwater and cooling water is covered quite completely. The book is especially good on the different softening processes applied to water, such as zeolite softening, hydrogen cation-exchanger softening, and cold and hot lime-soda softening.

It would have been desirable, Hawksley concludes, to give a fuller treatment to the properties of the new synthetic resin ion-exchange materials, as well as to the mixed-bed type de-mineralizer. *Reinhold Publishing Corp.* 1951. \$12.00.



# This Man Knows How To CUT COSTS TO THE CORE SPEED ASSEMBLY JOBS MEET URGENT SCHEDULES RELEASE VALUABLE MANPOWER

FOR MORE IMPORTANT WORK

## He Uses DPS Power-Driven Assembly Equipment

Contact Sales Engineers  
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## POWER SCREWDRIVERS

An absolute necessity in present-day production assembling. Will drive screws as fast as one a second—no marring of heads or stripping threads . . . All screws driven to uniform tension. Hopper fed . . . SCREWS ALWAYS IN SIGHT OF OPERATOR. 3 models to fit varying requirements.



## HOPPER UNITS

Motorized . . . Selects and feeds Screws, Screw Blanks, Rivets, Pins, Nuts, Discs, Washers, etc. in a given position for primary and secondary operations. Eliminates manual handling of parts. Highly adaptable to Presses, Centerless Grinders, Thread Rolling and Slotting Machines and Special Machines.

**DETROIT POWER SCREWDRIVER CO.**

2801 WEST FORT ST., DEPT. F, DETROIT 16, MICHIGAN

## A GENERAL EDUCATION on surface-active agents

"Encyclopedia of Surface-Active Agents," a 540-page book published by *Chemical Publishing Co., Inc.*, 212 Fifth Ave., New York 10, is divided into two sections. Part I deals with general aspects of surface-active agents, their properties, applications, and methods of manufacture. It also gives an efficient system of classification by which every modern variety can be identified with simple symbols. Part II is an alphabetical listing of brand-name surface-active agents manufactured all over the world with information listed on each. Price of encyclopedia is \$15.00.

## TO HELP YOU COLLECT for services rendered

"A Treasury of Collection Letters & Ideas" by Bernard L. Trippett treats, in practical fashion, problems of day-by-day collection management. Book outlines the MAGIC Method as a compact, flexible system for collection effort—to avoid wasting money and energy in operating credit departments, and in hit-or-miss methods—to provide a sound basis for training new personnel. Available through regular book outlets or write to publisher, *Universal Business Service*, 201 Howard St., Greenwood, Miss. \$2.00 per copy.

## GIVES CLEAR ANSWERS on welding ferrous and non-ferrous metals

"Weldability of Metals" is a 141-page book explaining factors which determine weldability. It gives causes and cures for hard-to-weld metals; details welding procedures for steels, nickel, iron, alloys, copper, aluminum and hardfacing. Reprinted from the 9th edition of "Procedure Handbook of Arc Welding Design and Practice," this book costs 50¢ in U. S. A.; 75¢ elsewhere, postage paid. Publisher is *The Lincoln Electric Co.*, Cleveland 17, Ohio.

## PROPERTIES OF METALS: reaction of metals to cold

You can now order, from Government Printing Office, Washington 25, D. C., the National Bureau of Standards Circular 520 on "Mechanical Properties of Metals at Low Temperatures" for \$1.50. Volume presents results of studies conducted both in industry and in government to further knowledge of metal behavior at low temperatures—important to an understanding of their basic rheological properties. 206 pages, 129 figures, 50 tables.

# MONEY-SAVING IDEAS

## about spray finishing and coating

### HEAVY MATERIALS

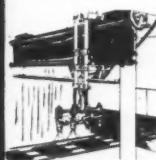


MATERIALS HANDLING EQUIPMENT  
9 models  
of air-operated pumps

#### Save up to 15% in time

Pump or spray "heavy" materials—like sand, deadeners, buffing compounds, rust preventatives, gear lubricants, etc.—directly from the original container by using a Binks Material Handling Pump. You save up to 15% in handling time alone.

### AUTOMATIC FINISHING



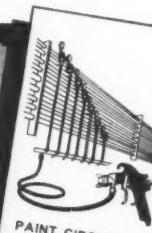
AUTOMATIC EQUIPMENT  
lowers production costs  
improves finish quality

#### Cut finishing costs automatically

On flat surfaces, use Binks Model 7R Spray Guns. Mechanical arms sweep the guns back and forth across products like wallboard, tile, glass, table tops, range parts, etc. On round or multi-sided products, use Binks Model 21 Guns for automatic finishing inside and/or outside. Ideal for such products as vehicle wheels, golf balls, appliances, etc.

### PAINT CIRCULATING SYSTEMS

#### Get identical finishes at each station



PAINT CIRCULATING SYSTEMS  
same finishes  
every time

Each spray station in the plant gets exactly the same paint at exactly the same pressure when you use a Binks Paint Circulating System. Paint circulates from a central mixing room, giving you rigid control of color and viscosity. The operator cannot change the material pressure. Identical finishes are a certain result.

### AIR SUPPLY SYSTEMS



AIR SUPPLY SYSTEMS  
for filtered, heated air

#### Stop dirt marring your finishes

Bring air into your spray booth(s) through a Binks Air Supply System. This system takes in fresh air from the outside, filters, heats, delivers it...warm and dirt-free...to the right area in the correct volume.

Mail coupon  
for informative, time-saving catalog!

Binks Manufacturing Co. 4915 Pacific Blvd., Los Angeles, Calif.

Gentlemen: Please rush my FREE copy of your CATALOG-DATA BOOK No. 955 containing informative descriptions of the many money-saving products in Binks complete line.

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# Binks

EVERYTHING FOR  
SPRAY PAINTING





A Kresky oil floor furnace is wheeled from end of assembly line to packing area and lowered upon the wirebound box which scientifically holds unit in place with no shifting.

## CUTTING PACKING EXPENSE

*while improving both  
quality and safety*

By ALBERT VAIL

Plant Superintendent  
Kresky Manufacturing Co., Inc.,  
Petaluma, Calif.

**C**RATING manufactured articles for shipment is nearly always a "top item" of expense whose economic importance and influence upon profit and loss is often overlooked. At the Kresky Manufacturing Co.

plant in Petaluma, Calif., however, we have both improved our packing-for-shipment and saved money for ourselves and our customers while doing it by adopting scientifically engineered crates.

That our packing is not only economical, but also highly efficient, is attested by the fact that we are permitted use of the coveted label of the National Safe Transit Committee for

our floor furnaces, wall furnaces, domestic and commercial oil burners, domestic space heaters, and other products.

Our books show that by converting to the use of 10 different designs of wirebound crates engineered so as to be used for a total of 16 models and sizes of products, we have reduced our packing costs as high as 50 per cent on individual items as compared to when we made our own containers from lumber bought on the open market.

### Contributing factors

Among the factors contributing to our packing-for-shipment economies are less man-time required to pack Kresky units, lower initial container costs, saving of factory space formerly needed to make crates, reductions of as much as 40 pounds or 75 per cent in shipping container tare weights, average reduction in displacement of five per cent, and elimination of shipping damage due to container failure.

In addition to these economies, we

A Kresky unit about to be "wrapped up" in a one-piece wirebound wrap-around "mat" comprising four sides of crate.

## REVOLATOR

POWER LIFT TRUCKS

CATALOGS  
SALES  
SERVICE

HAND LIFT TRUCKS

PORTABLE ELEVATORS

# IRAG. PERIN CO.

MATERIAL HANDLING EQUIPMENT

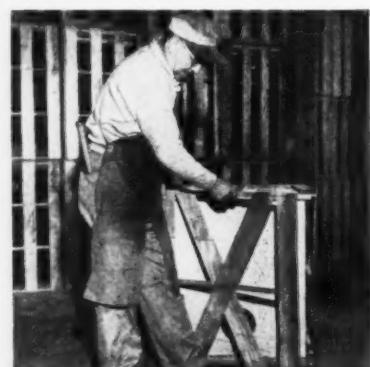
575 HOWARD ST., Dept. C  
GARFIELD 1-1827

SAN FRANCISCO 5

EST.  
1920

6829 WITA AVE., Dept. C  
JEFFERSON 3213

HUNTINGTON PARK





Wrapping nears completion as end cleats of mat engage upper side of crate top and underside of crate base and exert pressure to prevent unit from shifting.

also have effected important savings for our distributors and dealers since lower shipping container tare weights and displacements have impressively reduced freight and cartage charges. Furthermore, the danger of inflicting damage upon units during uncrating has been eliminated. The wire-loop fasteners of the wirebound crates are easily and quickly disengaged without special tools so that the crate actually is removed from its contents instead of the contents being removed from the crate.

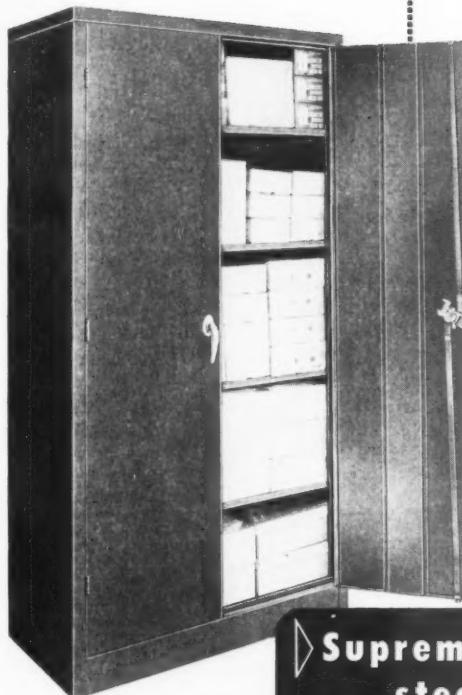
#### Packing room revisions

Even though our packing-for-shipment conversion required drastic revisions in our packing room operations, we feel that they have more than paid for themselves, not only in direct economies but also by giving us the prestige of bearing the NST label and greater assurance that our products reach the ultimate consumers in the same first class condition in which they emerge from our assembly lines.

#### RESEARCH IN structural clay

1953 WILL SEE research activities of the Structural Clay Products industry concentrated on developing improved job-site techniques and more convenient unit sizes and shapes. This prediction is made by C. W. Kraft, president of Kraftile Co. in commenting on a report covering activities of the Structural Clay Products Research Foundation. With the original research fund goal of \$1,250,000 almost achieved, manufacturers have voted to renew research contracts on a permanent basis for further reduction of in-the-wall costs of clay masonry construction.

**protect** supplies  
and parts



► **Supreme  
steel  
cabinets**

Keep office forms, coats and hats, valuable small parts safe and clean. Supreme cabinets are attractive in any office and stand up to the hardest use in factory or warehouse. You have a choice of deluxe grey or standard olive green from the most complete range of styles & sizes manufactured.

#### Stocked in California—Immediate Delivery!

They are in stock—no shipping delay. Phone or write D. H. Graham for information and prices . . . or for name of local dealer.



► **SUPREME**  
The most complete  
line of steel  
cabinets made.

**GREEN-PENNY CO.**

421 EAST WASHINGTON BLVD., LOS ANGELES, CALIFORNIA

PROSPECT 9196

- Shelving • Lockers
- Cabinets • Stools
- Automotive Bins
- Small Parts Drawers
- Tool Room Enclosures
- Work Benches

## AIR FREIGHT UP at Los Angeles

A SUMMARY of volumes of air traffic at Los Angeles International Airport shows a marked increase for the period from 1947 through 1952. The air express figures show 8,133,671 lbs. carried in and out of the airport during 1947 in comparison with 13,038,091 lbs. carried during 1952. Air freight accounted for 13,772,087 lbs. in 1947 against 42,138,166 lbs. for 1952.

## ORANGE JUICE takes a powder

A NEW MEANS for manufacture of powdered orange juice yields a product that stores well under severe conditions and makes a fresh flavored beverage when reconstituted with water. Studies leading to this new method were carried on at Bureau of Agricultural and Industrial Chemistry's Western Regional Research Laboratory in Albany, California.

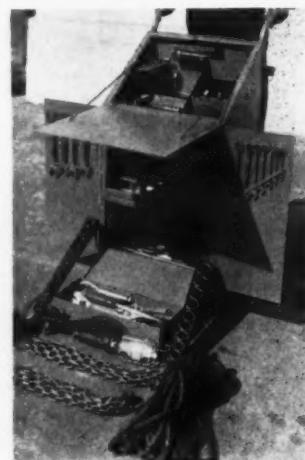
Orange juice is concentrated at low temperatures and then dried by a new vacuum process under carefully controlled conditions.

A measured quantity of powder

dropped into a glass of water dissolves immediately, and remains dispersed without settling out. Nutritive factors, such as vitamins A and C are well preserved, even after prolonged storage. Also developed is a similar process for retaining all aroma and flavor in producing fruit preserves.

## BATTERY ADDITIVE passes the acid test

BATTERY AD-X2, a life-prolonging additive for lead-acid storage batteries, which has been given editorial mention in *Western Industry* in the past, has won a signal victory which has already been widely publicized. The National Bureau of Standards had long insisted that the additive, manufactured by Pioneers, Inc., of Oakland, had no real value, despite favorable reports from tests conducted by the Sacramento Air Materiel Command and others. Jess M. Ritchie, president of Pioneers, Inc., appealed to the Senate Small Business Committee for aid, who in turn had Massachusetts Institute of Technology make its own tests. The result substantiated manufacturer's claims that the battery is not "worthless."



## A PLACE FOR EVERY- THING and everything in its place

SO THAT maintenance men will always go out on a job with the right tools, A. J. Baker of National Supply Co.'s maintenance department, Torrance, Calif., designed and built this portable tool box. Two wheels plus convenient handles make it easy to push; three feet enable it to stand firmly when on the job.

## RADAR FINDS TROUBLE fast in power lines

SUCCESSFUL USE of radar for almost instant location of distant breaks in high voltage electric power transmission lines is now being made on the snow covered Sierra and Coast ranges by Pacific Gas and Electric Co.

Coupled with radio dispatching of trouble-shooting crews to a break, this new industrial application of electronics marks an advance in maintenance service to customers. A break in a snow-laden 60,000-volt power line in Shasta County was pinpointed within minutes, while formerly, a field crew had to check lines a few miles at a time.

Radar sends a high frequency impulse out along the wire to a break, from where part of it bounces back to the sending set. Distance to the break is read from a dial.

Also being tested is another type of electronic device used for locating trouble on low-voltage lines.



SPUR • HERRINGBONE  
WORM • HELICAL  
STRAIGHT & SPIRAL BEVEL  
RACKS • SPROCKETS

GEAR CUTTING  
GRINDING  
MACHINE WORK  
HEAT TREATING  
RIGHT ANGLE  
GEAR DRIVES



**JOHNSON GEAR**  
AND MANUFACTURING CO.

45 YEARS SERVICE TO INDUSTRY  
8th & PARKER STS.  
BERKELEY 10, CALIFORNIA

## GAS TURBINE ENGINES to power helicopters

GAS TURBINE engines have numerous advantages over reciprocating engines for powering helicopters according to a paper presented at a meeting of the Society of Automotive Engineers by J. L. Koetting and L. R. Wosika, engineers for Solar Aircraft Co.

Among the advantages of gas turbines for rotary wing aircraft are: savings in weight—gas turbines have a higher power-to-weight ratio than reciprocating engines; speed-torque characteristics of a free power gas turbine are especially suited to helicopter application; clutching problems can be greatly simplified through use of gas turbine engines.

Progress is being made in reducing fuel consumption in gas turbines as a result of research programs now under way.

## INDUSTRY MOBILIZES in the S. F. Bay area

BAY AREA Committee on Post-Attack Industrial Rehabilitations urges adoption of a national program to ensure production in an atomic war. This San Francisco Bay Area committee issued a number of preparedness actions to be taken by federal agencies and individual companies to prevent the enemy's atomic strikes from being decisive.

The plan, a result of three months study, recommends initiating civil defense programs, organizing for damage and repair, and providing alternatives for key jobs.

An article (Disaster Defense on a Practical Basis, Nov. 1952) in *Western Industry* reported mobilization of Richmond's Ford plant along this line.

## RADIATION EFFECTS tested for lubricants

THE WEST'S first high-intensity industrial source of gamma radiation is now being used by California Research Corp., subsidiary of Standard Oil Co. of California. Gamma rays given off by an atomic "pile" are being used to test the effects of irradiation on lubricants and other materials likely to be exposed to radioactivity in an atomic engine. The Richmond laboratory's source of radiation is a 14-inch section of two-inch cobalt tubing which has been irradiated in an atomic pile for three months.



### an ever-widening circle

of Western firms uses Colson Casters

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All shapes, sizes, kinds and prices of casters are stocked in California and serviced by engineers. There is no need to design special casters for your equipment when Colson can meet your requirements exactly from stock. Phone or write for information.

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# HELPFUL LITERATURE

for the plant operator who wants to keep informed

Use rip-out post-card for your free copies

## 1 Buyer's guide for drill bushings

Outstanding feature of *The American Drill Bushing Co.*'s new catalog is its king size selection of drill jig bushings. More than 50% of all bushings previously called "specials" are now standard sizes with this company. All lengths may be ordered as standard at no extra cost. Catalog includes handy technical reference charts and data.

## 2 Alloy information from Kaiser

A 20-page brochure provides general information on Kaiser Aluminum alloys, basic properties, and availabilities of various forms. Descriptions include applications, mechanical and physical properties, and other valuable things-to-know. *Kaiser Aluminum & Chemical Sales, Inc.*

## 3 Details on pre-sealed insulated pipe

*Durant Insulated Pipe Co.* has a new folder on D. I. P. pre-sealed insulated pipe for underground and weather-exposed piping systems conveying hot or cold liquids or gases. Applications, special features, design, construction, fabrication, and specifications are given here. (6C)

## 4 "Lady, Lend Us Your Dog" . . .

... is title of *Clark Equipment Co.*'s current issue of Material Handling News wherein you will find a case history of how a Canadian executive saved \$4,500 a year and increased his usable storage space by 37,000 cu. ft. when he installed a fork truck handling system. Before and after pictures are shown of plant in question.

## 5 All about ramming and hot patching

An attractive two-color folder from *Kaiser Chemicals* will tell you about Permanente 84 Periclase ramming and hot patching material. Outstanding features of this product are said to be reliability and versatility. Various product advantages are said to add up to earlier availability of furnaces and more steel production—now—on your present equipment.

## 6 Everything on monorails



A file of "Engineered Applications" begins a new service offered to potential users of monorail equipment. Material consisting of case histories comes in a sturdy folder handy for reference. *American Monorail Co.* plans to forward new groups of case studies, as completed, to all registered file holders.

## 7 All about control centers

*Westinghouse Electric Corp.* offers a 32-page application booklet on control centers which stresses case for centralizing all controls of an entire system in one group of enclosures. Booklet discusses characteristics of control centers that make for flexibility of application, ease of servicing, and safety of operating personnel.

## 8 Correction

Engineering bulletin (52B) on MPB ball bearings is offered by *Albert M Schweitzer*. It was credited erroneously to *Ira G. Perin Co.* in item No. 13, January, *Western Industry*.

## 9 Industrial location facts about "The Dalles Dam Area"

This one should satisfy almost any inquiring mind about this area. Industrial location facts have been gathered together by *Ivan Bloch and Assoc.*, and are presented in handy file-folder form. Subject matter includes (general headings): population, transportation, electric power, water supply, fuels, taxation, plant sites, and climate.

## 10 On selecting speed reducers

*Western Gear Works* is issuing a new 36-page booklet on Pacific-Western Right Angle Speed Reducers, spiral bevel and helical gear types. Contained in this bulletin is information to assist customers in selecting the proper speed reducer for any job. (5203)

## 11 "The Economy of Montana"

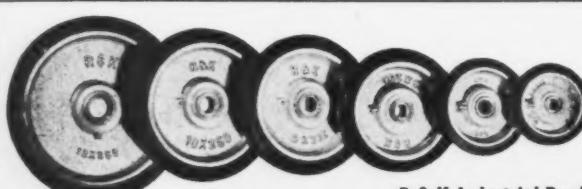
Bureau of Business and Economic Research at Montana State University is offering two volumes on "Unemployment Insurance in Montana." These books undertake a description and analysis of the employment situation, and include a study of statistics and economic prospects for future years.

## 12 Friction clutch selector

A *Link-Belt Co.* folder describing a line of friction clutches and clutch couplings is now available. Included are schematic drawings and dimensional tables that enable engineers to select proper clutch or clutch coupling for each requirement. (2437)

## 13 Guide for product designers

A 20-page brochure issued by *Massonite Corp.* describes both features and potential uses of Preswood for many industrial applications. Photo-



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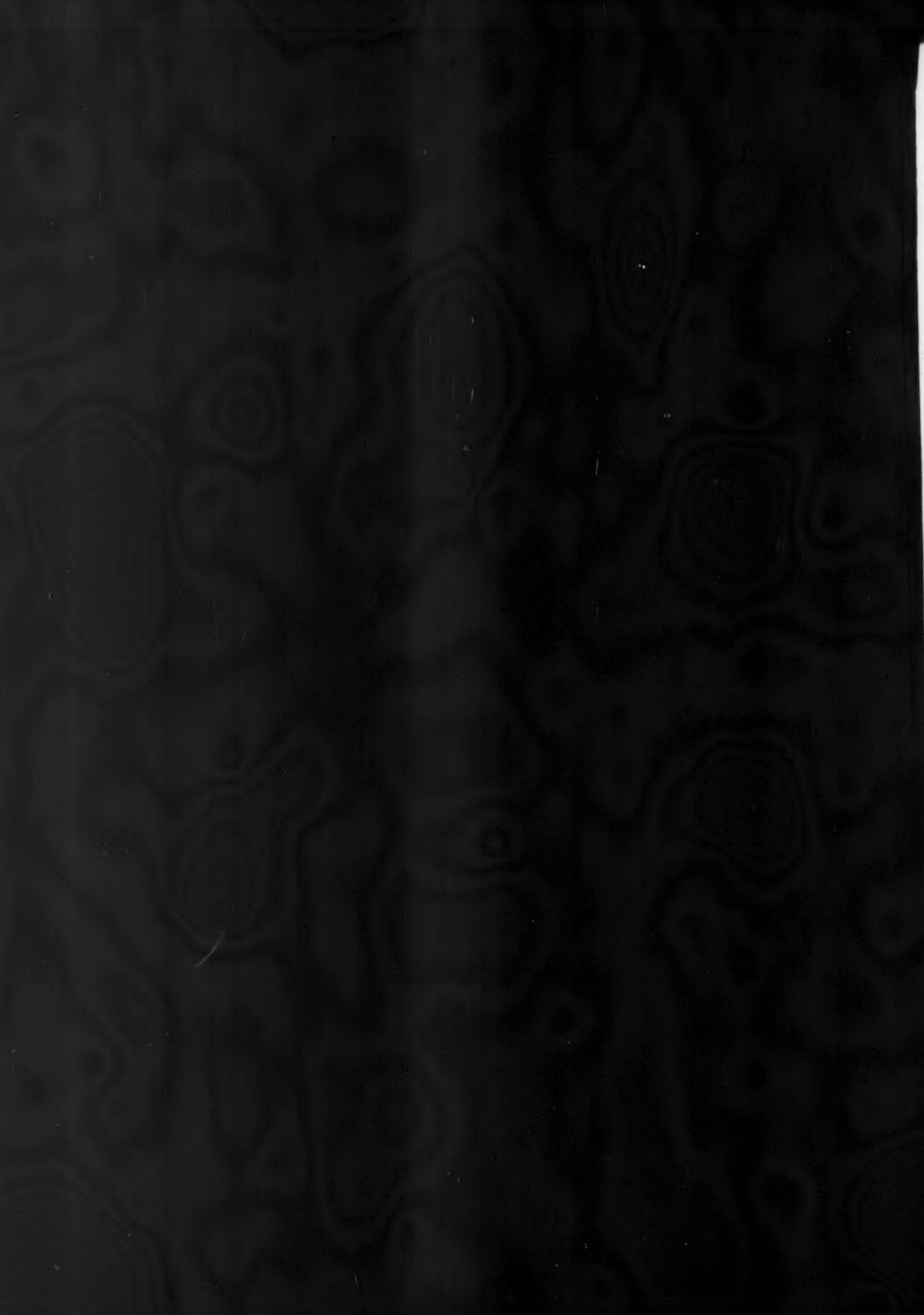
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53



graphs, text, tables and sketches cover products, advantages, manufacture, types and sizes, working, finishing and properties.

14

#### Gas and oil burner booklet

*Coen Company*, manufacturer of industrial gas and oil burners has a new bulletin illustrating and describing Pac-O-Matic oil, gas, and combination oil and gas burners for industrial, process and institutional heat and power. These completely packaged preassembled units are available in 15 standard sizes from 50 to 900 hp. (P-152)

15

#### Engineering details on compressor line

A new, comprehensive compressor booklet is available for distribution to all interested in a broad range of industrial air compressing and chemical processing operations. This 44-page manual provides basic application data with design specifications for the complete line of reciprocating compressors of *The Cooper-Bessemer Corp.* (U-70)

16

#### Buyer's guide on purifiers and mechanical separators

*The V. D. Anderson Co.* offers an illustrated pamphlet on its line of purifiers and mechanical separators. The pamphlet tells how these separators save money for virtually every type of plant by cleaning up steam, gases and vapors to remove 99% of dirt, solids and moisture. (501)

17

#### What is lowest cost between two points?

Answer to that one is a gravity conveyor, if you will read a new 16-page bulletin which describes several types of gravity conveyors manufactured by *Packing Equipment Division, Food Machinery and Chemical Corp.* Four complete lines of gravity conveyors illustrated include: standard roller, light duty roller, staggered wheel and side wheel conveyors.

18

#### Applications of button head socket screws

*Standard Pressed Steel Co.* has a bulletin on its new line of Unbrako button head socket screws. The bulletin cites the advantages of the button head screws, including threads to head, low-height, non-slip drive, safety socket without burrs, concentricity of threads and heads, and class three thread fit. Numerous applications are listed and illustrated.



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### 19 Useful data on twist drills

A 16-page booklet of twist drills has just been published by *The DoAll Company*. This literature covers a variety of types which include straight and taper shanks, three- and four-fluted drills, heavy duty and high helix drills, etc. Also listed are drill sets, drill and reamer blanks, sleeves and holders. Instructions for drill pointing and web thinning are also included. (51-816)

### 20 24-page tool bulletin

*Utica Drop Forge & Tool Corp.* is now offering a new and improved tool catalog. A special feature of the publication is the accurate diagramming of the tool jaws, with exact dimensions. The 24-page catalog contains useful list of decimal equivalents and pertinent data on all Utica tools in many sizes—82 models of pliers and Utica's complete line of adjustable wrenches. (66-1952)

### 21 A wealth of information on centrifugal compressors

*American Blower Corp.* puts out a 12-page three-color bulletin giving information on its centrifugal compressors. Subject matter covers functions, applications, ratings and design features of single-stage units. (109)

### 22 Small vertical pump bulletin

An eight-page bulletin just released by *Allis-Chalmers Manufacturing Co.* describes construction features of firm's small vertical pumps for sidewall or submerged mounting. Units covered are available in capacities to 250 gal. per minute at heads to 125 ft. for coolant circulating, air conditioning, etc. (52B6975A)

### 23 Info on new speed reducers

"Shaft King," a new series of 20 to 1 shaft-mounted speed-reduction units is illustrated and described in a 20-page guide now being published by *The American Pulley Co.* This booklet gives complete information on dimensions of units, where they are used and how they are installed, as well as instructions for selection.

### 24 Timing relays described

*Allen-Bradley Co.* offers a 16-page bulletin featuring its complete line of timing relays. Fluid dashpot, pneumatic, and electronic timers are described and applications stated. Also contained is complete operation and engineering data.



7

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## NEW MATERIALS & EQUIPMENT

35

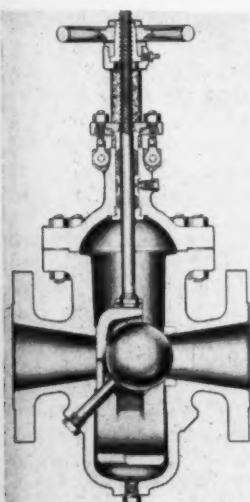
**New sharpening method produces longer lasting tool edges**



A new method for sharpening tungsten-carbide cutting tools, without a diamond wheel, cuts cost per tool by  $\frac{2}{3}$ . This new machine uses a coated abrasive belt traveling over cast-iron contact wheel, to produce a longer lasting cutting edge. *Behr-Manning Corp.* and *Fenlind Engineering Co.*

36

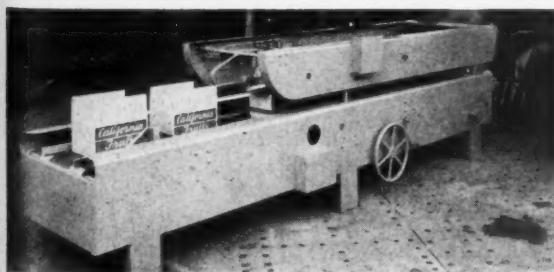
**A new line of venturi ball valves**



Operating on a new principle, this line of valves utilizes a ball instead of the conventional disk. Design provides accurate flow control and complete freedom from vibration and chattering. *Crane Co.*

37

**Automatic case sealer saves one-half floor space**



Sealmaster short automatic case sealer requires about one-half floor space needed by conventional case sealers. Overall width of each model is 38 in., with length depending upon model chosen. Machine may be mounted on casters and moved about. *Elliott Manufacturing Co.*

38

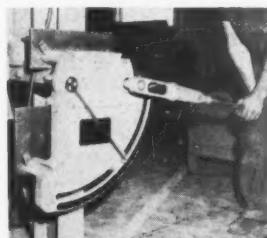
**Speed reducer features overload protection device**



Designed as a conveyor drive this worm gear reducer incorporates an automatic and instantaneous shut-off device for overload protection. Feature eliminates need of shear pin coupling. Recommended uses include conveyor drives, stoker drives, roll drives, tumblers, etc. *Philadelphia Gear Works, Inc.*

39

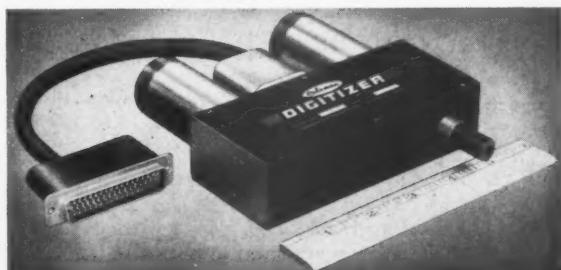
**Fast-operating torque-testers**



Two new devices for testing all sizes of torque wrenches for the first time permit a visual means of gauging torque accuracy. These testers are reported to be much faster to operate and are guaranteed accurate within 2% full scale reading. *B. K. Sweeny Mfg. Co.*

40

**Check this ingenious, efficient "Digitizer"**



This electro-mechanical device provides compact aid to those concerned with data generating, transmission and reduction systems. It can represent, in digital form any varying dimension which can be resolved into a shaft position analog. *Coleman Engineering Co.*

41

**V-link belting has new features**

This V-belt manufacturer adds two new features to its line with no extra cost to customer. All belts will have size symbol embossed on each rivet head, and a new natural rubber compound which increases flexibility will be used. *Brammer Corp.*

**another production problem solved with**



### stress relief and varnish baking of cartridge cases

Designed to solve a double-barreled treating and finishing problem in the mass production of cartridge cases, this gas-fired ROSS System is operating 24 hours a day for NORRIS-THERMADOR CORP. at Los Angeles, Cal. Where the need is for speed, accuracy and dependability in operation, there you'll find ROSS Systems on the job.

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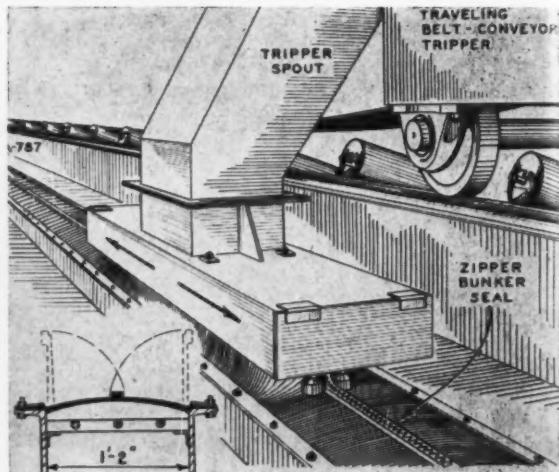
### J. O. ROSS ENGINEERING CORPORATION

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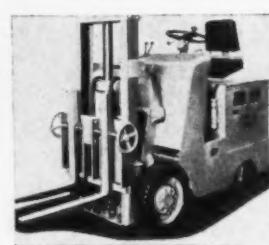
NEW YORK 22, N. Y.  
Los Angeles 17, Cal.  
Seattle 1, Wash.

**42**  
Zipper design keeps dust from belt conveyor



S-A Zipper Bunker Seal is designed to keep dust from belt conveyor traveling tripper discharge spouts feeding bunkers. It consists of two zipper-toothed seal belt strips plus an opening and closing mechanism. Made for power plant coal systems, seal usage is equally effective in other industries where traveling trippers are used. *Stephens-Adamson Manufacturing Co.*

**43**  
Special device for rapid fork adjustment



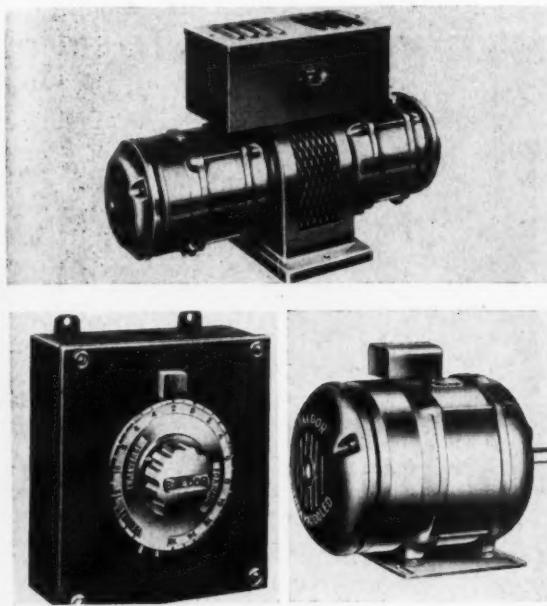
A new attachment is now made for fork truck users who must make frequent fork adjustments while maintaining positive positioning. Unit, known as "screw adjusting forks" will be particularly useful in plants where skids, pallets and tote boxes of varying sizes are handled. *Ira G. Perin Co.*

**44**  
"Rotary breaches" grow up



This reamer is product of seven years of constant improvements. Holes made with instrument may now be finished to accuracy of plus or minus .0001. Final surface-finish produced is generally 10 to 40 RMS. Frequently, grinding, honing and lapping operations are eliminated by use of this tool. *Shearcut Tool Co.*

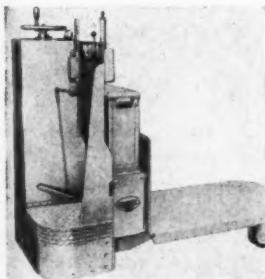
## Adjustable-speed motor system



Top—power unit. Left—control unit. Right—motor.

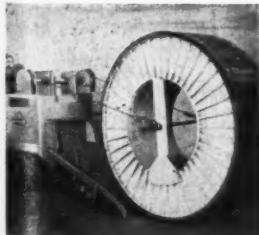
Baldor Adjustable-Speed Motor System's component parts—motor-generator set, controller, and drive motor—may be mounted any distance from each other, and in any position. Sizes are  $\frac{3}{4}$  hp. through 3 hp. for operation from polyphase circuits and  $\frac{3}{4}$  hp. through  $1\frac{1}{2}$  hp. for operation from single phase circuits. *Baldor Electric Co.*

## Electric platform truck for 6-ft. aisles



New "Transveyor" riding-type electric platform truck permits 6-ft. aisle operation. This compact, lightweight, maneuverable materials handling unit, with 4,000-lb. capacity, comes in 6, 7, 9, or 11-in. platform heights. Platform lengths vary from 36 to 72 in., overall length from 61 to 97 in. *Automatic Transportation Co.*

## Platform truck for reel handling



Designed for handling large reels up to 96-in. diameter and weighing up to 20,000 lbs., this powered platform truck is equipped with a rocking platform and a powered winch. Other models, designed for reels weighing 6,000, 10,000 and 12,000 lbs., are also available. *Elwell-Parker Electric Co.*

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ALUMINUM

STRONGER than STEEL

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...readily available to Western Industry!

Chemical Process Company, Redwood City, California is pleased to announce that it is now manufacturing a complete line of polyester resins . . . which may be molded or laminated with Fiberglas to make such versatile products as:

- gear housings
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- automobile bodies
- building panels
- riveters hats
- boats and ladders

Over 100 fabricators on the west coast have had production experience using this new corrosion-resistant material. Linked with Chempro's new product development staff, Western Industry has now in its own back yard the "knowhow" and facilities to solve most any problem in reinforced plastics. If you have a product or an application which you think may be adapted to reinforced plastics write for information today!



PHOTOS show Fiberglas reinforced-plastic tray and translucent Fiberglas reinforced-plastic corrugated panels used for side-lighting, sky lights and other purposes.

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of your Telephone Directory**



**Pacific Telephone**

48  
**New use of gage blocks eliminates special tool costs**



Indicating-snap-gage using "pre-calibrated" dial indicator (an "end standard"), extra long gage blocks and a long holder.

Gage blocks, previously used only for checking gaging and layout instruments, can now be assembled into extremely accurate gaging instruments for practically any layout application. Benefits include increased accuracy, more productivity from personnel, and elimination of outlay for special tool room or production gages. *The DoAll Co.*

49  
**Light-weight straddle truck for weaker floors**

Rider-type, electrically-powered fork lift straddle truck, Yale Warehouser, is short in length and light in weight. Designed for right-angle tiering in five- to six-ft.-wide aisles, it operates in elevators and on flooring that will not sustain heavier rider-type electric lift trucks. *Yale & Towne Manufacturing Co.*

50  
**Prolonged smooth operation with this electric impact wrench**

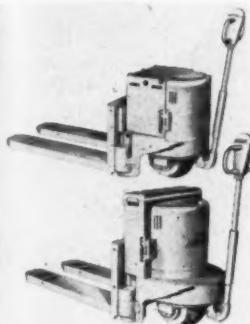


"Tork-Hammer," model 4EW, is mounted on an anti-friction bearing. It features housing die-cast of aluminum alloy and a pistol grip with detachable side handle for easy handling. Net weight is 16 1/4 lbs. Spindle speed is 1,800 rpm. free. *Mall Tool Co.*

51  
**Valve flexible and quick for emergency control**

Flexibility is standout feature of this new sentry piston-operated quick-opening valve applicable to fire and other emergency control systems in industrial, chemical and petroleum plants. Any number of valves may be operated manually or in combination with fire fused seals. *McRae Corp.*

**Versatile pallet trucks for close-quarter handling**



**Combination hand truck-trailer handles palletized loads**



Model A-310-326M is an all-steel, caster-steer trailer with simple brake mechanism for easy manual control when operating on grades. Flush deck construction, 4,000-lb. capacity. *Mercury Manufacturing Co.*

**Step ladder trucks for stock work**

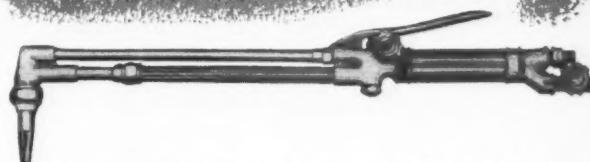


"Stock Pickers" are of all-aluminum construction. They each have a patented step ladder on one end which slides down to brace truck. Five-model line includes trucks with one, two and three steps per ladder. *Rol-Away Truck Co.*



**the  
man  
on the  
job...**

**Wants VICTOR Reliability**



He gets reliability and efficiency in VICTOR welding and cutting torches, and regulators because they're built right.

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CIRCLE CUTTING  
ATTACHMENT**

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various heights  
and diameters  
from 1 1/4" to 28".



**VICTOR**

*Welding and Cutting Equipment*

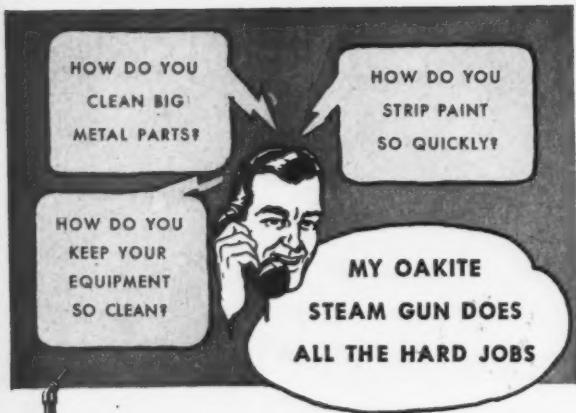
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**FREE** For your copy of "Time saved with Oakite steam-detergent cleaning" write to Oakite Products, Inc., 1001 E. First St., Los Angeles, or 681 Market St., San Francisco, Calif.



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**REALOCK FENCE**

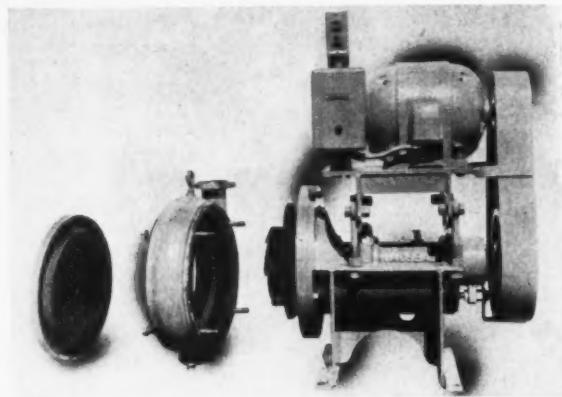
THE COLORADO FUEL AND IRON CORPORATION

BRANCHES IN ALL KEY CITIES



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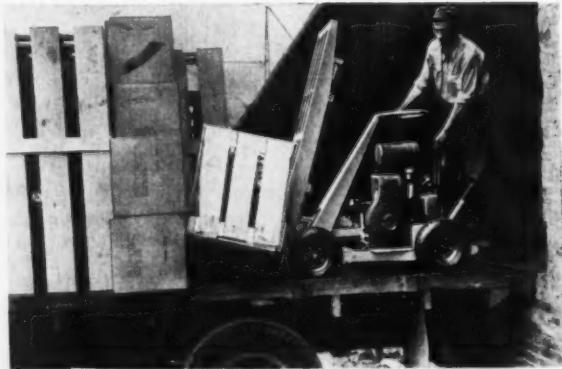
### New pumps for handling solids and acids



Vacseal pumps operate on patented "vacuum-seal" principle which prevents fluids or entrained solids from being forced into gland. Suction lifts of from 10 to 12 ft. are possible. Manufactured in rubber lined and all metal types with capacity ranges up to 3,000 gpm. Both vertical and horizontal types are available. Pictured is a 2-in. Vacseal pump with section cover and casing removed. *The Galigher Co.*

56

### Hand truck combines convenience with power and speed



Compact construction, small turning radius and front wheel steering enables "Xpediter" material handling truck to move through narrow aisles and crowded or cluttered areas. Light weight permits use on elevators and floors where heavy units cannot operate. Offered in six models—hydraulic and manual lifts—to handle materials up to 800 lbs. (12-in. load center), 7.5 hp., 9-mph. forward speed, 7-mph. reverse speed. *Kalamazoo Manufacturing Co.*

57

### Phosphor bronze electrode makes stronger joint

All-State No. 24 Type "C" phosphor bronze electrode has a special flux said to completely encircle each drop of metal as it leaves electrode and to provide "globular protection" until it reaches base metal. This assures maintenance in deposit of all original analysis components and also enables complete "floating out" of slag in easily removable form. *All-State Welding Alloys Co., Inc.*

Use rip-out postcard for more information

58

**Light-weight portable power belt conveyor**



"Versaveyor" is a new concept of design in portable conveyors. With body of aircraft aluminum alloy, weight is  $\frac{1}{3}$  that of steel with no sacrifice of strength. Drive unit is totally enclosed within conveyor body. Screw-type undercarriages can be adjusted fast for any height horizontal or inclined positions. May also be used for floor-to-floor operations. Impregnated 12-in. belt with vulcanized cleats or rough surface handles loads to 300 lb. Available in 13-ft. to 19-ft. lengths. *The Belt Corp.*

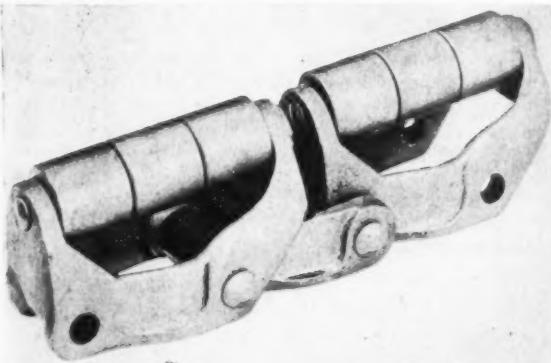
59

**Here is a warp-resistant door material**

Quarter-inch thick Duolux is a hardboard, perfectly smooth on both sides, designed for manufacture of panel doors. Manufacturer says that product is warp and moisture resistant and virtually indestructible. Panels come four or five ft. wide and up to 16 ft. long. *Masonite Corp.*

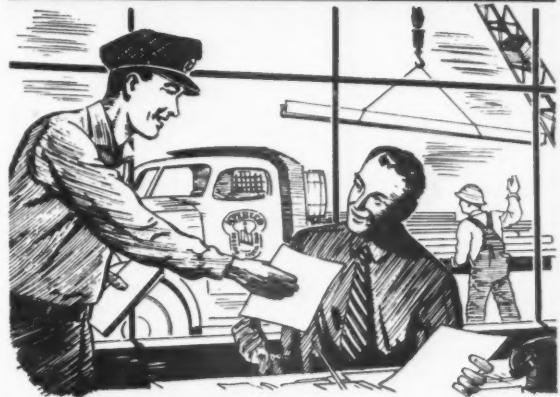
60

**Triple roller top chain speeds up lumber sorting**



For lumber sorting tables and similar applications there is a new chain, with three rollers instead of one, to prevent one board from dragging another with it when lumber is pulled from table. Link-Belt H-78 F-23 reduces drag and permits heavy timbers to be drawn off easily. Short concentric rollers, accurately bored and machine finished, reduce possibility of freezing to shaft. *Link-Belt Co.*

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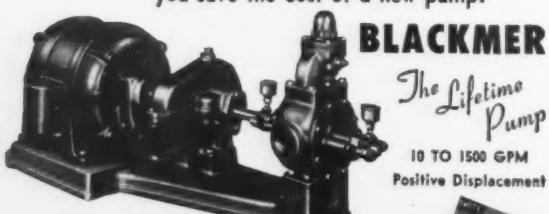
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● Blackmer Rotary Pumps are self-adjusting for wear. When the vanes finally wear out, change them, without disturbing piping or drive, and you save the cost of a new pump!

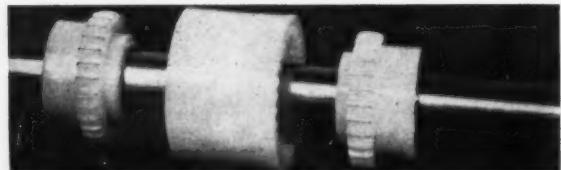


Get  
the  
facts

See how Blackmer Pumps handle light or viscous liquids efficiently—how they cut your pumping costs. Write for Bulletin 307.

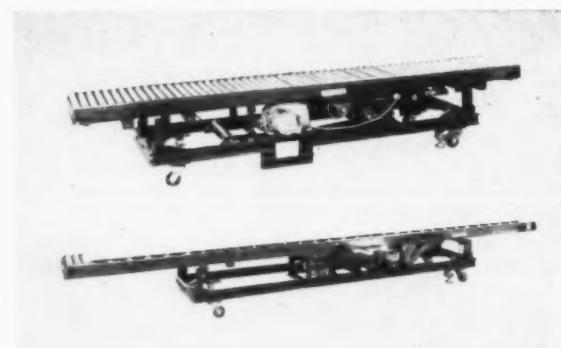
BLACKMER PUMP CO., GRAND RAPIDS, MICH.

## 61 Junior size gear coupling



This inexpensive gear type coupling will fit smallest fractional hp. drives. It is available for nominal bores down to  $\frac{3}{8}$  in. diameter. Made of smooth, tough, unbreakable nylon, it withstands corrosion and is not affected by most liquids and gases. *John Waldron Corp.*

## 62 Here are two new portable conveyor units



Top: Roller surface makes this unit suitable for a sorting table. Steel rollers make it easy to move commodity from side to side or to slide.

Below: Designed for conveying miscellaneous goods, this unit is of rugged construction. Elevation is adjustable by a series of holes in supporting legs. Length recommended from 10 to 25 ft.; width to suit belts from 12 to 36-in. widths. *Standard Conveyor Co.*

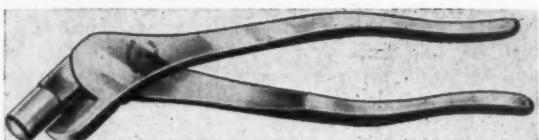
## 63 New valve eliminates leakage

Cycloflow valve is primarily designed for controlling cycles of flow in ion-exchange equipment. It completely eliminates all possibility of contaminating leakage by providing an isolated section between outlet and all sources of contamination. *American Water Softener Co.*

## 64 Longer operational life with "Tote Trucks"

Tote Trucks, proved in farm and poultry ranch use, are now offered to industrial users. An 8-hour power supply is furnished by special batteries which can be recharged overnight. According to manufacturer, trucks feature silent operation, no fumes, less maintenance and longer life. *Electric Marketeer Manufacturing Co.*

Angle pliers with triple talents



New Utica Angle Locknut Pliers No. 750-8" takes care of three special electrical jobs: it tightens locknuts in outlet boxes; removes burrs from steel tube or conduit; cuts and skins rubber covered wire. Special design results in tighter locknuts and bushings and a permanently grounded system. *Utica Drop Forge & Tool Corp.*

No fuss, no muss with this crane



Barrett electrically operated revolving-base portable crane picks up its own load (reaching over several rows if necessary) and carries it to destination with minimum physical effort on part of operator—deposits on exact spot desired. Crane capacities range from 500 to 5,000 lbs. *Barrett-Cravens Co.*



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WHEELS ARE RIGHT

Over 65 years in wheel manufacturing have given us the "know how"—modern production methods assure long life and efficient wheel performance in the field.

There is an ELECTRIC spoke or disc wheel for most types of portable equipment. Axles are available where required.

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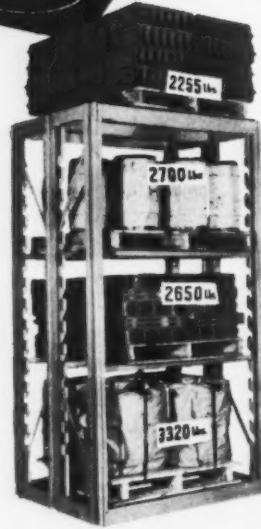
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Especially adjustable and suited to fit the many diversified, palletized storage problems of the West.

Irregular, fragile, odd-lot pallets quickly inserted, inspected, removed—with no squeeze losses. Eliminates "hunt, move, pick" problem.

Time-labor-space saving. Racks are mass produced—low cost.

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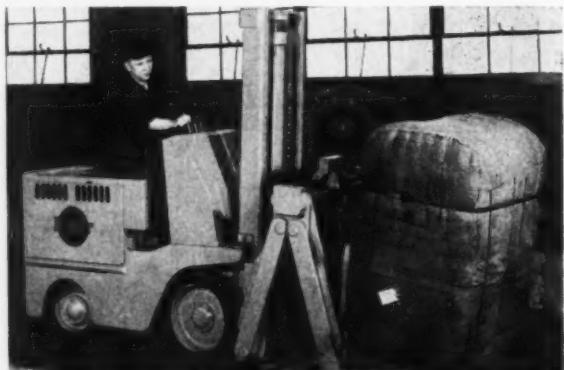
**A. R. MAAS CHEMICAL CO.**

Division of Victor Chemical Works  
4574 Ardine Street, South Gate, California • Telephone: Kimball 2214

## 67 Six-ton truck crane

Lorain Model TL-10 consists of a complete superstructure equipped as lifting crane which can be used as a  $\frac{3}{8}$ -yd. dragline or clamshell. Designed for field mounting on new or used trucks, it may also be mounted on piers, barges, etc. This is a two-drum, gasoline-powered machine fully equipped with 25-ft., 2-piece, butt-flange connected boom. *The Thew Shovel Co.*

## 68 Load-pusher attachment for fork trucks speeds handling



A new load-pusher, designed to speed handling of bulky, unpalletized loads such as scrap, paper, or textiles, is now available. Fork truck users can pick up large loads and unload them in seconds with no manual handling. *The Baker-Raulang Co.*

Use rip-out postcard for more information

## 69 Highest strength aluminum sheet

New 75S, highest strength standard aluminum sheet and plate alloy is designed to meet demands of aircraft manufacturers. Better physical properties under machine tapering and sculpturing operations are afforded without sacrificing protection. *Kaiser Aluminum & Chemical Sales, Inc.*

## 70 New light-weight line of diesel engines

Lister diesel engines, made in 1, 2, 3, 4, and 6 cylinders, in a range of 8 to 54 hp., are especially designed for operation at high speeds. They are constructed to be reliable at temperatures ranging from tropic to arctic. Weights of these engines is about  $\frac{1}{2}$  that of earlier models. *Engine Division of The National Supply Co.*

## 71 "Non-slip" valve handwheel

Designed to turn easily and safely this handwheel represents a scientific departure from conventional type of valve wheel which it replaces. A complete line of bronze and iron valves will be equipped with this new handwheel. *The Lunkenheimer Co.*

### Rotary gear pump with high efficiency rating

A motor pump designed for fluid transfer, lubrication, power tools, materials handling trucks, etc., is now being offered as most compact unit of its kind on market. Complete line is available from  $\frac{1}{4}$  hp. to  $1\frac{1}{2}$  hp., with a pump capacity ranging from 60 to 360 gallons hourly. *John S. Barnes Corp.*

### Safety headgear comes in plastic

A new line of one-piece compression-molded welding helmets (No. 700 series), composed of thermo-setting fiberglass reinforced with polyester resin, features strength and heat resistance. Manufacturer's tests show superior wear and performance. Smooth surface can be easily cleaned or sterilized. *American Optical Co.*

### Plastic applications increase with "Laminac" resins

With Laminac polyester resins it is now possible to mold large, one-piece structural parts of great strength. They can be molded or cast at room temperature without pressure. Furnished as clear liquids, these resins harden with qualities of electrical insulation, radio transparency, and chemical corrosion resistance. *American Cyanamid Co.*

### Silicone water-repellent coating lasts longer

Dehydratine No. 22, operating on principle of negative capillarity, offers stronger-than-usual resistance to passage of water. Applied by brush or spray, it repels water, minimizes efflorescence while allowing masonry to "breathe." Acid and alkali resistant. *A. C. Horn Co., Inc.*

### Manual gun for Aircomatic welding



Model No. 20 Aircomatic Gun, designed to operate with currents up to 500 amperes, is recommended for welding copper, bronzes, stainless steel and nickel. Internal water cooling of the gun and a water-cooled welding cable permit high current capacity without sacrifice of lightness and flexibility. *Air Reduction.*

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The Facts*

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WELDING NEEDS!**

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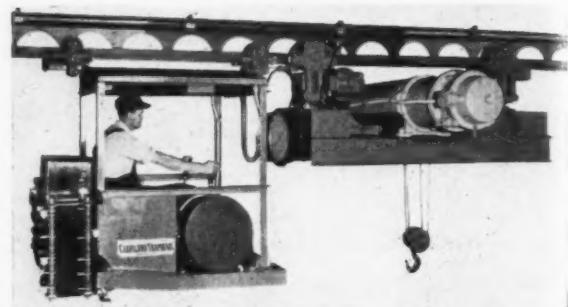
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77  
Tramrail carrier has hydraulic scale



This overhead traveling carrier, equipped with a hydraulic cell scale, permits weighing all loads handled, quickly and easily. Scale weighs in pounds or kilograms. Carrier has travel speed of 300 fpm. Hoist has a speed of 38 fpm, and a lift of 36 ft. *Cleveland Tramrail Division of The Cleveland Crane & Engineering Co.*

78  
Micronic filter protects your  
hydraulic system

Here is a filter to remove microscopic particles dangerous to insides of hydraulic pumps, valves and other components. It can be mounted inside a fluid tank either horizontally or vertically. Built-in inlet shut-off valve and external removable head allow replacement of filter element without draining tank. *The Rucker Manufacturing Co.*

**The NEW  
F & H  
ECONOMY  
WHEEL**

**A Packaged  
WHEEL-HUB-SPINDLE-BEARING  
ASSEMBLY  
for LIGHT APPLICATIONS**

This LOW COST, soundly engineered Economy Wheel is designed for loads averaging 750 lbs. per wheel. For original and replacement use on portable grain elevators, light trailers, lime spreaders, sprayers etc., etc.

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(Left to Right) Rim and Disc, Spindle, Washer, Roller Bearing, Hub, Spacer, Roller Bearing, Washer, Cap and Locking Pin.

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**KELSEY-HAYES WHEEL COMPANY**  
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### Lithium grease cuts volume, costs and bearing failures

High resistance to breakdown is a basic characteristic of Shell Alvania Grease, a lithium base product. Other properties, including high water tolerance, broad temperature range, low rate of oxidation, long induction period, and storage stability, make this product a true multi-purpose lubricant. *Shell Oil Co.*

### "Registered" rule insures against breakage

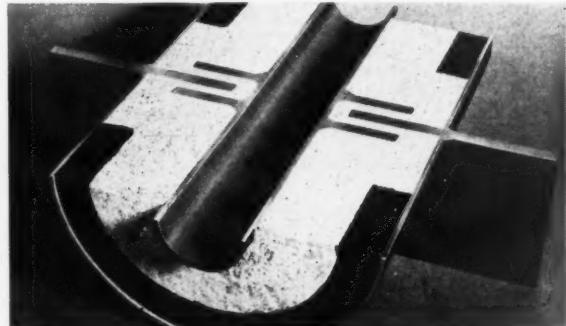
When registered at time of purchase, multi-feature X226 Four Way Extension Green End rule will be replaced free of charge if it breaks in normal usage within three months. Offer is made as part of Centennial celebration. *Stanley Tools.*

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### Automatic drum filler is a liquid asset

Here is an automatic drum filler for oils and other liquids, capable of filling 1,000 drums of 53- to 55-gal. capacity per 8-hour shift. Substantial savings in filling costs and in material losses because of overfilling are reported. Wide variations in drum heights, diameter and bung locations are accommodated automatically. *Rucker Co.*

### Insulated anchor for piping cuts down heat loss



A new type anchor for use in underground insulated pipe systems eliminates contact between anchor plate and pipe. Plate is insulated thermally and electrically by a non-compressible block of Transite sheet material. Design and material minimize heat loss at anchorage points and prevent corrosion. *Durant Insulated Pipe Co.*

### Design advances for shaft-mounted speed reducers

"Shaft-King," a new series of 20 to 1 ratio speed-reduction units, exclusively feature both ball bearings and tapered-roller bearings where each can be utilized most effectively. Longer bearing and gear life is made possible by exclusive three-wall housing. *The American Pulley Co.*



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Tank settlement... thermal expansion and contraction caused misalignment of pipe and the consequent breakage of rigid pipe connections on large oil storage tanks.

Today, this large New England storage center has no trouble with pipe breakage. A length of 120' I.D. x 1" wall Penflex and specially packed Penflex tubing was installed with tight-packed

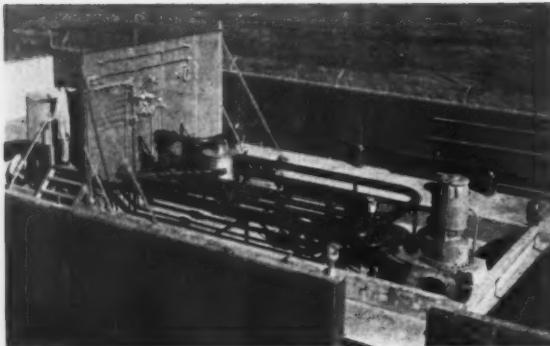
flanges. No amount of settling of the tank or thermal expansion causes breakage of connections. The tank "walks" Penflex "walks" with the tank... yet maintains a tight leak-proof connection at all times. Leakage has been eliminated... fire hazard reduced.

Let Penflex engineers help you on flexible tubing application problems. Write for "Penflexing," a valuable production aid.

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NEW Hi-Flow test unit as seen from rear of main control panel.

AN ELABORATE Hi-Flow test facility recently completed at Parker Aircraft Co., Los Angeles, has made a big difference in high speed fueling of aircraft.

Reported to be the most advanced of its kind, this test unit supplies aviation fuel at controlled rates of flow up to 1,200 gallons per minute for determining characteristics and performance of fuel system components.

Uses of the facility are directed toward two ends:

(1) To refine elements of the high speed system already developed by the

parent firm, Parker Appliance Co. of Cleveland, Ohio, and used to pressure-fuel planes at four to eight times the conventional rate.

(2) To test still newer equipment which, when perfected, is expected to simplify, improve and possibly step up refueling operations even more.

#### Speed up important

Acceleration of refueling is vitally important to military aviation. In the case of giant bombers, which take on tank car loads of fuel, time required for servicing by conventional methods

has already been cut by more than two-thirds.

Parker's test unit is contained within a steel-reinforced concrete-walled area 60 ft. long by 35 ft. wide. Two large centrifugal pumps, one driven by a 50 hp., and the other by a 40 hp. motor, deliver fuel to test set from two underground storage tanks having a combined capacity of 10,000 gallons.

These pumps drive fuel through selected metering pipes chosen automatically by the test operator to give conditions of pressure and flow desired at test basin. Through one or another of

NOT A SIDE-LINE

## VIKING

Builds The Full Line In  
**ROTARY PUMPS**

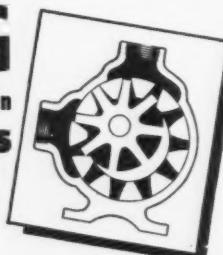
The designing, testing, manufacturing and applying of Viking Rotary pumps is VIKING'S one and only job.

What does this actually mean to you? It means that the energy, the development, and the output are at no time devoted to some other product.

The result is a superior rotary pump in a greater range of sizes and types to really fit your needs better.

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Cedar Falls, Iowa

## FUELING DEVELOPMENT

**speeds up aircraft servicing  
and tests new equipment**

## Test Proven Stronger!

**Dings Perma-Plate Magnets  
Do These Jobs Better**

### PROTECT PRODUCT PURITY

THIS chocolate processor relies upon non-electric Dings Perma-Plates—proven strongest in the laboratories of one of the world's largest cereal makers—to remove fine iron particles that could contaminate his product.



### PROTECT PROCESSING EQUIPMENT

SUPER strong Dings Perma-Plates never weaken, give full time protection to dies and molds in this phonograph record plant by removing iron from re-ground plastic.



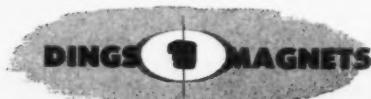
### PREVENT FIRES, EXPLOSIONS

STRENGTH of this Dings Perma-Plate Garnett Magnet at work in a bedding plant is certified, guaranteed forever—like all Perma-Plates. It removes iron that could spark, cause fires, and explosions . . . triples garnett cylinder life while doing it.

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Non-electric Dings  
Perma-Plate Magnet.



the eight instrument scales on the control panel, remote inter-controls set all gauges and switches necessary to establish proper mechanical operation.

Some 200 electrical circuits, involving 1000 wire runs, are used in the control system.

Entire fluid-handling system is fil-

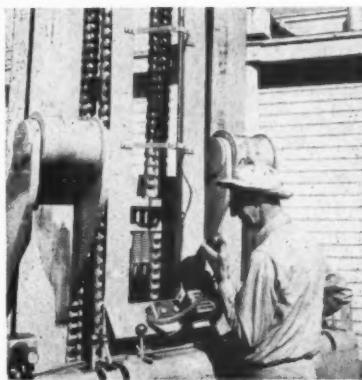
tered to remove foreign matter. So efficient is this operation that particles as small as two ten-thousandths of an inch are detected and rejected.

## LOW-POWERED RADIO shortens distance from plant to yard

COMMUNICATION between widely separated rolling equipment at Douglas Aircraft Company, Inc.'s El Segundo operations is being handled successfully by low-powered radio. Tests conducted in moving heavy dies have resulted in substantial savings in use of costly equipment.

One radio set is installed on a car-loader in the plant's die yard, with another unit in the dispatcher's office, a half mile away. When a new die is required from the die yard, a dispatcher is phoned, who then radios instructions to a car-loader. The five-acre die yard holds 3,600 dies weighing up to 39,000 lbs.

Results of these tests are so encouraging that two-way radios are now being installed in all 30 carloaders operating all over the 381 acres of plant property.



CARLOADER operator receives radioed instructions from the dispatcher in motor transportation department of Douglas Aircraft Co.'s El Segundo, Calif., division, to deliver die from die storage yard to firm's drop-hammer department.

## SURVEY OF WESTERN oil industry

AN ECONOMIC survey of five West Coast states shows that the oil industry has a total investment of \$4,876,000,000 in crude oil production. Total investment in oil wells, pipelines, refineries and marketing facilities averages \$32,000 per employee. Assets include over 30,000 producing oil wells, 56 refineries with a total daily capacity of more than 1,100,000 barrels of crude oil, and several thousand miles of crude oil and products pipe line, numerous tank trucks, tank cars, ocean-going tankers and great storage facilities.

The oil industry is the largest industrial taxpayer in the five Coast states and paid \$575,113,000 in federal, state and local taxes during 1951. 151,000 persons were employed during 1951 and their salaries and wages amounted to more than \$650,000,000.

*Another Tough Material Handling Problem—Solved by HAMMOND Screw-Lift*



Installation at Ronzoni Macaroni Co., plant in Brooklyn — one of America's largest Macaroni manufacturers.

Features: Dust-tight, compact, fast, clean. Saves space, offers easy access to interior of conveyor—requires a minimum of operating labor.

Hammond Horizontal Screw-Veyor coupled with Screw-Lift makes a fast, clean job out of a cumbersome, slow and costly hand operation—taking Macaroni Flour from receiving point and conveying and distributing it to storage tanks a considerable distance away.

Result — production considerably increased and the job accomplished efficiently which no other type of conveyor could equal in performance.

All horizontal conveyor is drop bottom type enabling frequent cleaning to comply with rigid health inspection.

Write for Form No. M-500-2 and M-600-2

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Call **Nutting** For TRUCKS WHEELS CASTERS



FIG. 1452 Heavy duty bar handle platform truck



FIG. 1611 Balance-type platform stake truck



FIG. 1152 DPL Light weight 2-wheel utility truck



FIG. 18 Western Pattern with Steam Bent Handles



FIG. 216 Golden Gate Pattern

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# THE WEST ON ITS WAY

## ARIZONA

**WATER PLANT CAPACITY TO BE DOUBLED**—Construction will begin immediately on a \$254,000 project to double capacity of Arizona Public Service Co.'s water treatment plant in Yuma. Contract for this job is awarded to Fisher Contracting Co. An additional 10,000,000 gal. of water will be provided daily for Yuma area domestic users.

**CONTRACT FOR GOODYEAR**—Good-year Aircraft Corp.'s plant at Litchfield Park will produce components for Air Force's twin-engine T-36 trainer-transport under a multi-million dollar contract just awarded. The contract with Beech Aircraft Corp., Wichita, Kan., calls for local fabrication of tail fuselage sections, plexiglass and steel framework of canopy assembly and cabin assembly.

**NEW COOLER UNIT AT GLENDALE**—Crystal Ice and Cold Storage Co. constructs a \$300,000 vacuum cooling plant in Glendale on South Seventh Ave. This is firm's second plant of this kind in the valley and it will be 25% larger than the Phoenix plant.

## CALIFORNIA

**FORD MOTOR PLANS**—Ford Motor Company is purchasing 150 acres of land near Milpitas, Alameda County, for a new assembly plant to succeed its present Richmond plant. Cost of new project about \$35,000,000. It will have double the capacity of Richmond plant. Move is dictated by lack of room at Richmond, and desire of company to give workers best of living conditions.

**NAME PLATE PLANT**—Miller Dial and Name Plate Co., Los Angeles producer of metal, plastic and phenolic dials and related items, constructs a new \$300,000 building in El Monte. Single story factory is of concrete tilt-up construction with steel columns and wood trusses. MacIsaac and Menke Co., Los Angeles contractor, is erecting the building.

**STANDARD STATISTICS**—A \$30,000,000 refinery expansion program in California was undertaken in 1952 by Standard Oil Co. of Calif. which included six major projects begun or completed. New additions include: a \$10,000,000 benzene plant, nearing completion at El Segundo; a \$4,000,000 phenol plant under construction at Richmond; a total of \$1,500,000 in addition to the detergent Alkane plant and paraxylene plants in Richmond; a \$1,000,000 continuous acid treating plant, capable of treating 4,500 barrels of feed stock daily for manufacture of lubrication oils, at Richmond; and a \$900,000 expansion of the phthalic anhydride plant at Richmond.

**SMITH BOOTH USHER ACQUIRED BY WEMCO**—Western Machinery Co., San Francisco engineering and equipment manufacturing and distributing firm, with world-wide operations, acquires Smith Booth Usher Co., Los Angeles distributor of construction equipment and machinery. It will be operated as a division of WEMCO, occupying the same premises at 2001 South Santa Fe Ave., with substantially the same personnel.

**GMC INCREASES WEST'S ALLOTMENT**—General Motors Corp. increases its allotment of cars to Pacific Coast area this year because this section of the country leads the nation in population gain, percentage-wise, since 1941.

**DOUGLAS PLANS EXPANSION**—Douglas Aircraft Co., Inc., plans a \$2,000,000 expansion program for its Long Beach plant, designed primarily to push production of the RB-66 swept-wing reconnaissance jet bomber. Expansion will include an engineering test building to cost approximately \$1,000,000, a \$750,000 electronics building and a \$186,000 jet engine test building. New units will incorporate more than 75,000 sq. ft. of floor space.

**ON TAP**—Ground is broken in San Fernando Valley on a \$15,000,000 Anheuser-Busch brewery, designed for a production capacity of 920,000 barrels of beer a year. Structure is located on a 65-acre site at Woodley Ave. and Roscoe Blvd. Anheuser-Busch expects to employ 600 to 750 persons in new plant and to produce around 750,000 bottles of Budweiser a day.

**THREE DIMENSIONAL MOVIES**—Stereocinema is the name of a new corporation formed to produce 12 programs of three-dimensional motion pic-

ture features and short subjects a year. The newly formed Hollywood company will produce its films under a contract it holds with Stereo-Cine studios for use of the latter's 3-D photographic equipment. Films will be exhibited under Stereocinema's franchise system. Principals in new firm include independent producer Sol Lesser; Mike Rosenberg, Principal Theaters president, and William Forman, president of Pacific Drive-In Theaters.

**PAPER WORK**—Sharon Converting Co., San Francisco, purchases Osborn Paper Co., Marion, Ind., for an undisclosed price. Newly acquired plant is a paper converter and will supply increasing demands of Osborn's West Coast customers. Sharon Converting Co. will be operated as a wholly-owned subsidiary.

**MORE ABOUT CONVERSION**—International Paper Co., New York, plans construction in Los Angeles of a new converting plant for production of corrugated fibre shipping containers. Plant will be located at 6150 Sheila St., and will produce about 48,000 tons a year.

**NEW PARTMAN PLANT**—Partman Manufacturing Co.'s plant is newest addition to El Cajon industrial tract. Company, which recently exhibited its \$100,000 worth of equipment to open-house guests, is engaged in work on aircraft sub-contracts in all phases of machine shop operation.

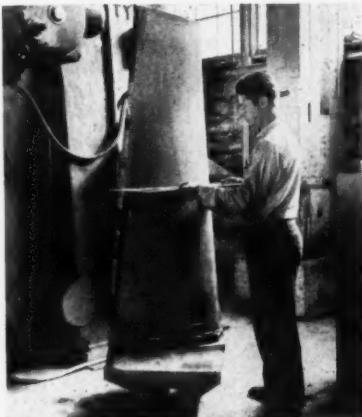
**AIRWAYS ACQUISITION**—California Eastern Airways, Inc., Oakland, acquires an 80% interest in Air Carrier Service Corp., Washington, D. C., distributor of aeronautical supplies and provider of technical services. Newly acquired firm provides a purchasing or-

**CHIKSAN EXPANSION**—Chiksan Co., Brea, plans construction of a large modern building adjacent to its present office building. Structure will have 28,000 sq. ft. of working area and will consist of a finished material warehouse and assembly section, with an office area to accommodate purchasing, personnel, cost accounting, price estimating, production and material control and sales development departments. Included will be a large sales conference room which will also serve as a display room for plant visitors.



ganization for the use of airlines and aviation manufacturing and maintenance firms outside the United States and holds agencies for leading aircraft and accessory manufacturers.

**LARGEST ROTATING MACHINE** — Westinghouse Electric Corp. is building the world's largest rotating machine for use in a new U. S. Air Force wind tunnel



at Tullahoma, Tenn. Machine's five tremendous compressors are being built at Westinghouse's Sunnyvale plant and the motors to drive them are being constructed in its East Pittsburgh, Pa., plant.

**NEW INDUSTRIAL TRACT NEAR L.A.** — New \$50,000,000 industrial tract near Los Angeles central manufacturing district is planned by Arthur A. Deesser, who is developing a 245-acre tract which he recently purchased for \$2,485,000. Pacific Telephone & Telegraph Co., California Walnut Growers Association and Von's Grocery Co. have already purchased property on this tract.

**SAN DIEGO MANUFACTURERS ASSOCIATION** — A new organization, the San Diego Manufacturers Association, is formed at San Diego with the immediate aim of securing more aircraft sub-contracts for San Diego. Members of the group will exchange ideas and cooperate in obtaining these contracts.

**TV FIRM ENLARGING** — Pacific Mercury Television Manufacturing Corp., Van Nuys, plans enlargement of its manufacturing facilities by 300,000 sq. ft. within the next four years. First step will be a 125,000 sq. ft. plant at Van Nuys which will provide employment for 400 to 500 workers. A second plant of equal size will be built later at Ulrichsplat, Ala.

**ARMY ORDNANCE CONTRACTS** — Army Ordnance contracts totaling nearly \$10,000,000 have been awarded to five Los Angeles County firms: Norris-Thermador Corp., Vernon, \$3,290,800 for 90 mm. brass cartridge cases, \$2,173,000 for 75 mm. steel cartridge cases, \$1,055,184 for 57 mm. steel cartridge cases; Harvey Machine Co., Torrance, \$1,358,544 for rocket fuses, \$1,000,000 for 20 mm. projectiles, \$315,360 for percussion primers, and \$105,600 for 30 mm. projectiles; Price-Pfister Manufacturing Co., Los Angeles, \$882,086 for point detonating fuses; Harvill Corp., \$654,285 for point detonating fuses, and Ohlsson & Rice, Inc., \$56,608 for percussion primers.

## RUGGED, LOW COST AIR CYLINDER WITH BUILT-IN VALVE SETS NEW STANDARDS FOR FAST, PRECISION OPERATIONS



Built-in electrical operating controls, built-in 4-way valve, built-in dual piston rod speed regulators, all with a single air connection, simplify installation of economical pneumatic circuits.

Any repetitive push, pull or lift movement now done manually can be performed infinitely faster, safer, and at lower cost with this unique, electrically-controlled Bellows Air Motor. The range of work it can do is limited only by the imagination of the tool designer or production engineer.

Unlike conventional air cylinders which require separate remote valves and cumbersome piping, the Bellows Air Motor is a complete power unit. It is compact, fits into crowded quarters, on moving machine elements. It is fast, responds to a starting impulse instantly. It is safe. Its low voltage operation simplifies wiring. It is sturdy: records of 10,000,000, 15,000,000, even 30,000,000 cycles without maintenance or repairs are commonplace.

The Bellows Air Motor is made in a wide range of mounting styles; in five bore sizes to meet varying power requirements; and in standard stroke lengths up to 48". For mechanical or manual operation

the Air Motor can be equipped with a built-in manual valve, or for operation in explosive - hazardous areas with the built-in explosion-proof electrically controlled valve.

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**LEMON AID** — Realemon-Puritan Co. acquires the processing and packing facilities of Paramount Citrus Association, San Fernando organization of citrus growers, for an undisclosed price. Newly acquired plant occupies 180,000 sq. ft. of space in the citrus belt and is equipped with processing, concentrating and freezing equipment for packing orange and lemon products. Purchase was made to increase Realemon's production of frozen lemonade.

**MILL LEASING** — General Mills, Inc., leases a portion of Yuba City Mills, Yuba City. Yuba City mills will continue to carry on its extensive seed and fertilizer business.

**HARVEY ADDITIONS** — Harvey Machine Co., Inc., Torrance, plans to build a \$20,000,000 rolling mill for aluminum sheets, strips and circular shapes on a site near its main plant. New mill is part of the expansion goal set by Defense Production Administration to increase facilities for production and heat treating of aluminum sheets and strips for defense effort.

**PIPE LINE PIER PERMIT ASKED** — The Oil Terminals Co., San Francisco, applies for an Army permit to construct a pipeline pier and install four floating moorings on Humboldt Bay, just south of southern boundary of Eureka. Structure would be located on north side of mouth of Elk River, with the bayward end of pier approximately 225 ft. from shore.

**PLANT FOR BREA CHEMICALS** — Brea Chemicals, Inc., newly organized subsidiary of Union Oil Co. at Brea, plans construction of a specially designed \$13,000,000 plant for manufacture of ammonia for Western agriculture and industry. Amoniaco Corp., a non-affiliated company, will build the unit and finance its construction on a 30-acre site at Imperial Highway and Carolina Ave.

**ABOUT THAT RED STUFF** — Hunt Foods, Inc., Fullerton, purchases the Snider condiment business of General Foods Corp. Deal includes the 80-year old Snider catsup recipe, label and trade mark and factories at Albion, N. Y., and Fairmount, Ind.

**HOT SEAT NEWS** — Irving Products Co., Inc., San Leandro, is organized for purpose of manufacturing and marketing a new type electrically-heated chair, the Thermo-Rest. Product will also have a cooling unit for summer use.

**FURNITURE FACTORY** — Certified Chrome Furniture Co., Inc., commences construction of a new factory on four and a half acres of land at 755 Nash St., El Segundo, which will cost approximately \$1,750,000. Modern plant will contain about 90,000 sq. ft. of floor space, and provision will be made for a 150,000 sq. ft. expansion.

**JERSEY FIRM IN SAN LEANDRO** — Pettit Paint Co., Bellville, N. J., commences construction of a California operation on an industrial tract at 135th and Alvarado, San Leandro. First unit under construction is a 60 x 60-ft. warehouse. Production building for firm's marine paints is planned for later. Estimated investment is \$35,000 and initial payroll is four.

**SOLAR IS GROWING AGAIN** — Solar Aircraft Co.'s San Diego factory space is being expanded more than 500,000 sq. ft. by erection of new building at the corner of Pacific Highway and Hawthorn St. Structure will contain about 12,000 sq. ft. of manufacturing and office space and will accommodate company's purchasing, shipping and receiving departments. This firm's backlog of \$92,000,000 in orders necessitates this expansion.

**WEST COAST PLANT FOR DRACKETT** — Drackett Products Co., Cincinnati, Ohio, completes negotiations for a one-acre site at 135th Ave. and Alvarado St., San Leandro, and commences construction of a 25,000 sq. ft. building for a new West Coast plant to manufacture and distribute Drano, Windex and a dog food line. Investment is estimated at \$250,000.

**DIES AND DOLLS** — Ungar Electric Tools, Inc., Los Angeles manufacturer of soldering handles and interchangeable tips, as well as toys, moves to a new building at 4101 Redwood Ave., Venice, doubling present floor space.

**SAN LEANDRO'S BIGGEST YEAR** — Thirty-four new industries and distribution operations selected San Leandro for new plants in 1952. This is largest number in city's history. Also, 24 plants made expansions, providing a total new capital investment of \$14,000,000, and jobs for 1,200 workers. Industrial growth during the past six years amounts to \$64,000,000, and approximately 9,000 new jobs have been created. A 400% increase in retail trade has been reported for this period and 17,560 new living units have been added.

**NEW HILLER BUILDINGS** — Construction has begun on two buildings for Hiller Helicopter Co. of Palo Alto, on company property near its present facilities. Both buildings will be used primarily for production. One will comprise 12,000 sq. ft. and the other, 3,900 sq. ft., representing an investment of \$87,000.

## COLORADO

**RIO GRANDE TO SPEND \$20,000,000** — Denver & Rio Grande railroad will spend almost \$20,000,000 for new equipment and improvements in 1953.

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Planned purchases include five new diesel-electric locomotives, 1,700 all-steel, 70-ton freight cars for coal and other defense commodities, and 50 covered hopper freight cars.

#### NEW LANDS FOR URANIUM SEARCH

—Grand Junction Operations Office of U. S. Atomic Energy Commission is separating additional lands from the public domain for uranium exploration. These lands, located in Colorado and Utah, are being set aside in an effort to develop sufficient uranium ores to keep production on the Colorado Plateau at a maximum.

## IDAHO

**IDAHO POWER'S '53 BUDGET**—Idaho Power Co. reports a 1953 construction budget of \$12,858,000 for power plant, transmission line and substation improvements. Included are \$4,012,500 for power plant construction, \$2,500,400 for transmission lines, and \$2,475,000 for distribution lines.

## NEVADA

**BASIC REFRactories SEEKS EXPANSION**—Basic Refractories, Inc., Gabbs, seeks authorization from stockholders for a \$400,000 expansion program. About \$370,000 would be sought for modification of term loans and \$230,000 to supplement working capital.

## NEW MEXICO

**GAS AGREEMENT**—Colorado Oil & Gas Corp. assigns its large natural gas reserves in San Juan Basin, New Mexico, to Pacific Northwest Pipeline Corp. if the latter obtains a certificate of public convenience and necessity from the Federal Power Commission for construction of a proposed gas transmission line from San Juan Basin to Pacific Northwest. As part of this transaction, involving 464,000,000 cu. ft. of gas, Pacific Northwest agrees to sell and deliver to Colorado Interstate Gas Co., parent company of Colorado Oil & Gas Corp., an average of 100,000,000 cu. ft. of natural gas daily. Agreement would be for 20 years, and gas would be delivered at Rock Springs, Wyo.

## OREGON

**L. A. MAN BUYS LUMBER FIRMS**—Southern Oregon Sugar Pine Corp. and White City Lumber Co., owned by Glenn L. Jackson and Associates, Medford, is sold to Elkon Bregman and Associates, Los Angeles, at a reported \$7,000,000. Transaction includes sawmills at Tiller and Central Point, a planing mill in White City and 20,000 acres of standing timber in Siskiyou County, Calif., and in Jackson, Josephine and Douglas counties in Oregon.

**PLANT RE-PURCHASE**—Protective Coatings Corp. of Oregon, sold last year to Robert Wiley, is repurchased by Paul Battenfeld, original owner. It will be operated on the same basis as Protective

Coatings Corp. of Calif., at Richmond, also owned by Battenfeld. Both firms will engage in the manufacture of roof coatings, roof paints, asphalt roof coatings, caulking compounds and asphalt specialties for the jobber and wholesale trade, under private label.

**ST. HELENS MILL EXPANDS**—A \$6,000,000 expansion and modernization of the plant of St. Helens Pulp & Paper Co., St. Helens, is now under way. New installations include a \$1,250,000 multi-stage bleaching and a \$500,000 water treatment plant with a daily capacity of 30,000,000 gal. Expanded plant is expected to produce from 200 to 300 more tons late this spring.

**NICKEL SMELTER FOR OREGON**—Bechtel Corp. is awarded a contract to design and build a nickel smelter for Hanna Coal and Iron Corp. and Hanna Nickel Smelting Co., both subsidiaries of M. A. Hanna Co., Cleveland. Smelter will be near Riddle, Ore. These two Hanna firms have an agreement with Defense Materials Procurement Administration for producing 95,000,000 to 125,000,000 lbs. of low-grade nickel from Oregon deposit.

**IRON FIREMAN DIVISION RENAMED**—Iron Fireman Manufacturing Co., Portland, changes name of its heating control division to electronics division. However, the division will continue to

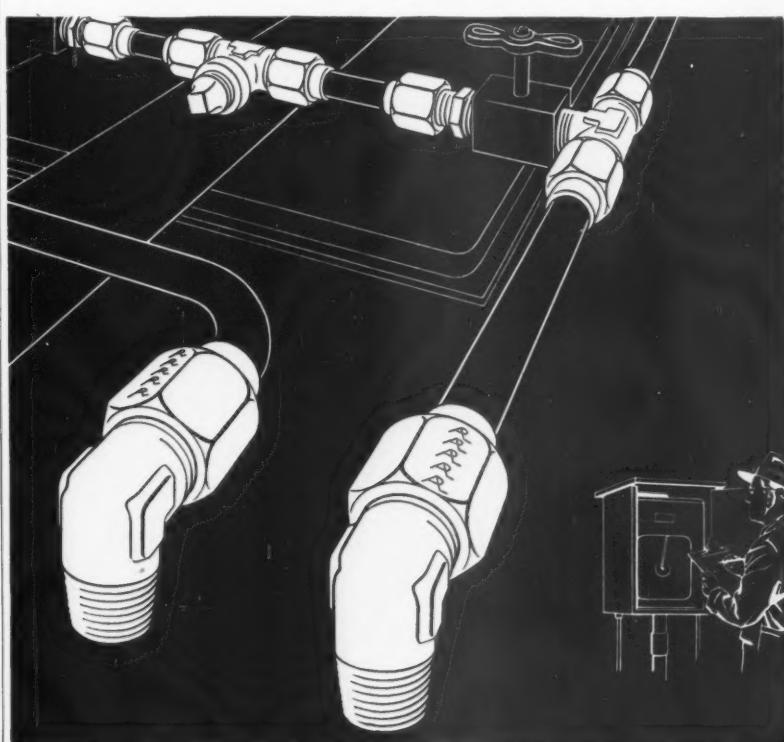


Illustration based on drawing of typical flow-meter assembly.

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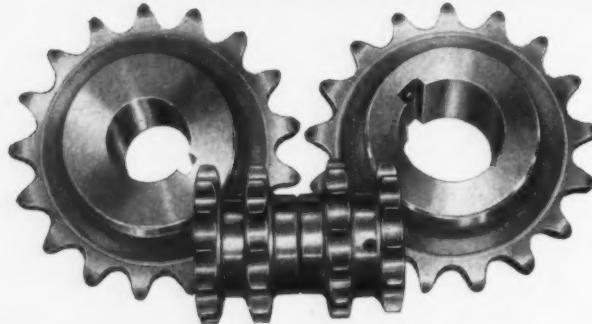
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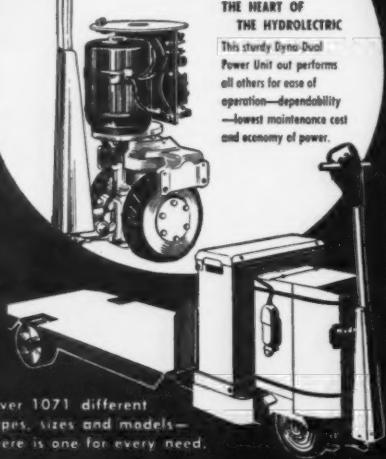
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**SISTERS MILL PURCHASED**—Dant & Russell, Ltd.'s Sisters sawmill at Sisters is sold to Leonard Lundgren, Camp Sherman, who plans to reopen the mill when adequate logs are obtained.

## UTAH

**STEAM-ELECTRIC PLANT PLANNED**—Utah Power & Light Co. plans a \$10,000,000 steam-electric generating plant near Carbon-Utah county line where a well is now being drilled by J. S. Lee & Sons, Salt Lake City. It is hoped that this well will produce sufficient cooling water for plant's operation. Facility should be completed by December 1954. A 66,000-kw. turbo generator is already on order.

**ACETYLENE CO. PURCHASED**—National Cylinder Gas Co., Chicago, purchases Acetylene Co., Salt Lake City, for a reported \$200,000. Purchaser plans to expand and redesign plant and make it suitable for manufacture and distribution of all lines of gases in the Intermountain area. Included in program will be installation of hydrogen manufacturing equipment.

## WASHINGTON

**LINCOLN LUMBER BOUGHT**—Valsetz Lumber Co., Valsetz, Ore., purchases Lincoln Lumber Co. from owners H. R. Dixon and G. Dixon, Jr., Spokane. Lincoln's principal logging camp is at Inchelium. Another camp is located on West fork of the San Poil River. The Lincoln mill, which has kiln drying, sorting and stacking facilities, has an annual production capacity of 60,000,000 ft.

**SHELL EXPANDS SEATTLE FACILITIES**—Shell Oil Co. plans a \$500,000 expansion of its storage facilities at Harbor Island Terminal, Seattle. Four additional tanks to be built will increase capacity by more than 12,000,000 gal.

**MINESWEEPER CONTRACTS FOR WASHINGTON YARDS**—Contracts for about \$13,000,000 worth of Navy minesweepers are awarded J. M. Martinac Shipbuilding Co., Tacoma, and Bellingham Shipyards, Bellingham. Tacoma firm will build five large minesweepers, costing about \$1,762,000 each; and the Bellingham company will build five smaller motor auxiliary minesweepers amounting to about \$765,000 each.

**ANOTHER REFINERY FOR PS**—Pacific Oil & Refining Co., Berwyn, Ill., plans construction of a 10,000-barrel-a-day oil refinery on Puget Sound, near Seattle, to handle Canadian crude oil from the Trans-Mountain Co., which is building a pipeline to the West Coast.

**WWP PLANS FOR '53**—Washington Water Power Co., Spokane, plans to spend about \$7,700,000 on its 1953 construction program. About \$4,000,000 will be used for completing Cabinet Gorge hydroelectric project. Approximately \$3,700,000 will be used for other facilities. Nine new substations will be built and the capacity of eight others

increased. Firm plans to continue engineering studies to determine feasibility of building a hydroelectric plant at Noxon Rapids in Montana, 24 miles up the Clark Fork River from Cabinet Gorge.

**NEW SHIPBUILDING FIRM**—The Marine Construction and Design Co. is incorporated in Seattle, and takes over adjoining properties of Shain Manufacturing Co. and Akervick Brothers Machine Works on Lake Washington Ship Canal, just west of Fishermen's Terminal. "Marco" will engage in repair and construction of commercial craft such as fishboats, tugs and barges.

**NEWS FROM HANFORD**—A \$40,000,000 contract is awarded to Blaw-Knox Co., Chemical Plant Division, Pittsburgh, Pa., for construction of a chemical processing plant for U. S. Atomic Energy Commission at Hanford. General Electric Co. and Vitro Corp. of America also receive contracts for work on this project.

AEC releases from restriction about 87,000 acres of land at the extreme east and west ends of the Wahluke Slope across the Columbia River from its Hanford production plants. Lands released from restriction comprise about 62,500 acres at east end of the Slope, including 23,000 acres under the Potholes East Canal, which will enable the Bureau of Reclamation to examine the irrigation service possibility from that canal. Released area also includes about 24,500 acres at extreme west end. This action will permit Reclamation Bureau to consider the irrigation of about 40,000 acres for crop production.

## MONSANTO OFFERS undergrad scholarship

A NEW undergraduate tuition-scholarship for senior chemical engineering students at the California Institute of Technology, is inaugurated by Monsanto Chemical Co. of St. Louis, Mo.

The scholarship is awarded this year to Manuel Crespo, Caltech senior in applied chemistry.

Purpose of grant is to cover school's tuition fee and stimulate interest of undergraduate students in chemical engineering. It is one of 17 undergraduate scholarships included in the firm's 1952-53 program of aid to scientific education.

Awarded to outstanding seniors on basis of merit, the scholarships are new to the industry as well as to Monsanto's program this year.

## FAST FREIGHT "merry-go-round"

FIVE of Consolidated Freightways' Western terminals (Seattle, Portland, Oakland, Salt Lake City, Los Angeles) are now entirely mechanized with completion of the firm's 1952 terminal construction program.

Key to the new system is a continuous drag-line conveyor, sometimes referred to as a "merry-go-round." Some terminals have under-floor units, others have overhead trolley type conveyors.

Freight now being transferred between vehicles for shipment or delivery is loaded onto four-wheeled carts, which are marked to indicate their proper destination on the freight dock. These carts are then hooked to the circular chain by a simple device, and move around to the appropriate loading bay where they are detached and freight is loaded into the waiting vehicle.

## GOLD AWARD for accident reduction

A GOLD Award given annually by Electric Bond and Share Company for the greatest reduction in accident frequency among its clients, was won last year by Washington Water Power Company. This company showed an injury index 80.88% below current national averages for the electric utility industry. Four other organizations will receive certificates for having injury indices more than 25% below national averages.

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**BARRY CONVEYOR PULLEYS**

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**POWER TRANSMISSION AND CONVEYING EQUIPMENT**

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## CELLOPHANED CANDY for supermarkets

IT WAS REPORTED in the January issue that cellophane-wrapped candy for supermarkets was the big new thing in the candy business today.

This new wrap has come into its own during the past few months particularly, and prospects seem to be very bright. The tremendous increase in Supermarket candy sale is attributed to the changed merchandising method; since candy heretofore has been primarily sold in candy stores or drug stores, or sold in bulk, the Supermarket was never looked upon as a prime outlet. Handling candy sales in such fashion was beyond the normal procedure for Supermarkets.

Now, however, cellophane-bagged units, from 6 oz. to 1 lb., are readily merchandised and easily controlled in Supermarkets.

Otherwise in the candy business there is no definite trend either in product or package. The industry is constantly looking for a change in package, ever seeking the one that will turn into a best seller. This year, designs have run from Cable Cars to Redwood Trees, from nude women to prima donnas.

## STOCKHOLDERS on payroll

ONE OUT OF every five persons Westinghouse Electric Corporation employs in the Pacific Coast District is buying Westinghouse common stock through a payroll deduction plan. Pacific Coast District set the pace for the rest of the company in percentage of new participants in this plan. District includes offices in all principal cities plus manufacturing and repair division plants in Sunnyvale, Emeryville and Huntington Park, Calif.; Salt Lake City; Portland, and Seattle.

## ONE "GISMO" does work of three

ONE interesting new development in metal mining is a device nicknamed the "gismo," and developed and patented by Dale I. Hayes, Western manager for American Zinc, Lead & Smelting.

This device is reported as performing work done by three different pieces of equipment, drilling the holes for blasting the ore loose, then scooping it up and finally carrying it away from the working face.

It is in use at the firm's Grandview mine, near Metaline Falls, Washington.

ton, where production has increased from the former 14 tons of ore per man shift by conventional machinery, to 81 tons of ore per man shift by the Gismo.

Its size permits it to be used in standard mine tunnels, and it can be modified to suit individual requirements of size, shape, capacity, and power application.

## HARDBOARD TESTS for new uses

OREGON FOREST Products Laboratory is investigating possibilities of providing Western dogwood and madrone for eastern manufacturers of shuttles, bobbins, and spools.

Tests are under way to determine hardness, ability to take a high polish, and smooth wearing qualities of these Western woods.

Shuttles and spools have been previously made from seven eastern woods, principally eastern dogwood. Supplies of this wood are running low, however, and if tests are successful it may be supplanted by substantial reserves of Western woods.

## MINING TRUCK maintenance

"TRAINING of truck drivers for 10 copper mines in the southeastern United States and northern New Mexico is a matter of considerable importance," according to H. Carroll Weed, speaking before the American Mining Congress, at Denver. Training varies from breaking in with a qualified driver as an instructor, to breaking in with a truck foreman as instructor with subsequent check-ups by the same foreman. Each of these companies takes extreme care in maintaining roads in proper condition and trucks in good operating condition. Tire condition is given careful consideration, and recapping is a standard practice of eight of the companies.

## RADIANT HEATING goes to school

LAST NOVEMBER California's voters passed on a program of School House Planning involving an outlay of approximately \$600,000,000 to be spent within the next five years.

It is expected that, if radiant heating comprises no less a percentage in School House Planning than is now being done, a \$50,000,000 radiant heating industry is in sight for California during the next five years.

## LOCOMOTIVE to burn propane

UNION PACIFIC Railroad is converting one of its six gas turbine locomotives to burn propane gas. Originally designed to burn low-grade "Bunker C" oil, this new type locomotive will be converted on an experimental basis in an effort to determine the most economical fuel. Six of these gas turbine electric locomotives are in service on U. P. between Green River, Wyo., and Ogden, Utah, and 19 more are being purchased from General Electric Co.

## WATER WHEEL features vertical shaft

AT THE new Pacific Gas and Electric Company's Bear River power house is the first sizable installation in the United States of a high-speed, multi-jet impulse or bucket-type water-wheel mounted on a vertical shaft. The normal mounting of this type water-wheel, which was invented in the Sierra during gold rush days, is with a horizontal shaft and a single jet of water to drive the wheel. The Bear River unit has three jets.

A model of the new-type turbine was successfully tested at P. G. & E.'s Halsey power house near Auburn in 1949, and the first full-scale installation in North America was made on the Bridge River in British Columbia. This proved to be a milestone in hydroelectric construction because of a notably high efficiency obtained.

## WESTERN APPAREL market trends

SHARP DECLINES in textile prices leveled off during last year and raw material costs were fairly stable. No major changes in factory wage contracts occurred, but creeping cost-of-living increases in indirect labor combined with other rising overhead costs to raise the break-even point perhaps as much as five to 10 per cent. Volume of business, however, was better than in 1951 and mortality among manufacturers was light, with the industry still experiencing growth.

Market weeks last fall were the best in several years, both in orders booked and in attendance by buyers. Store inventories are lighter than a year ago. Forward buying by the retail trade still is cautious, to the point where manufacturers, who likewise are playing their cards carefully, warn that they must have longer notice on deliveries.

## FILMS AND FILM STRIPS

### For Welding Instruction

A new series of three film strips on arc welding for use by instructors to introduce students to welding process, welding equipment, and where and how to use it is now available through The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio. All three films are produced in full color and come with a supplementary manual. Complete cost of films plus the manual is \$19.50.

### Microcast

"A Story of Industrial Progress" is the title of a new color movie prepared by Microcast Division of Austenal Laboratories, Inc., 244 E. 39th St., New York 16, N. Y. Film shows step by step how precision investment Microcast parts are mass produced for industry. This twenty-two minute, 16-mm. film is available without charge, and gives a thorough explanation of this unique process developed for economical production of virtually non-machinable temperature alloys.

### Packaging Payoff

This new 16-mm. motion picture, in sound and full color, is offered without charge to interested groups by Motion Picture Department, Reynolds Metals Co., 2500 Third St., Louisville 1, Kentucky. Movie shows increasing use of aluminum foil for labels and all types of protective packaging, and follows manufacture and application of aluminum foil from high speed presses to actual consumer purchase.

### Metal Joining Movie

Fabriform Metal Products, 7720 Maie Ave., Los Angeles 1, has developed a graphic presentation which includes a color, sound movie, illustrating the whole process of metal joining by copper furnace brazing method. This show, which may be booked without charge, contains sample parts that have been copper brazed, complete literature, design information, and other illustrative matter intended to give complete coverage of this metal joining method.

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# WESTERNERS AT WORK

## Arizona

*Magma Copper Co.*, Superior, names FRANK G. SARVER, formerly purchasing agent, assistant to vice president and general manager. C. B. FORAKER, who has been acting mine superintendent at Magma, is appointed mine superintendent. R. L. MEDLOCK, assistant purchasing agent, appointed purchasing agent. T. B. TRASK, formerly assistant chief electrician, promoted to chief electrician, and ELMER MATHEWS advances to chief electrical foreman.

Appointed to positions for *San Manuel Copper Corp.*, Superior, are: F. H. BUCHELLA, plant manager and director of engineering; J. F. BUCHANAN, mine manager; C. L. PILLAR, development superintendent; and H. I. ASHBY, general foreman.

## California

W. D. HOOPER, formerly vice president of *U. S. Products Corp.*, San Jose, becomes executive vice president of *Hunt Foods, Inc.*, Fullerton, and replaces IRVING GOLDFEDER, who is now chairman of firm's executive committee. LLOYD C. HILSZ, previously sales manager of *U. S. Products Corp.*, is now vice president in charge of sales.

HARRY N. HOW, formerly president of *Western Machinery Co.*, San Francisco, becomes chairman. JACK H. HOW rises from

role of vice president and general manager to become president and general manager. EDWARD BARSHALL is named secretary, and MRS. HARRY N. HOW, previously secretary-treasurer, becomes treasurer.

WILLIAM R. RIVERS is elected president of *Oakland Aircraft Engine Service*, subsidiary of *Transoceanic Air Lines*.

ALBERT HANSON, formerly factory manager in charge of all production for *Drayer-Hanson, Inc.*, Los Angeles, is placed in charge of overall sales. He is replaced by H. T. HUNT, formerly of *Consolidated Vultee Aircraft Corp.*

JOHN N. VALIANOS is elected executive vice president and general manager of *Bardwell & McAlister, Inc.*, Burbank, Calif.



J. N. Valianos

A. Gabay

*Vacu-Blast Company, Inc.*, names ALEXANDER GABAY works manager of its new works in Belmont, Calif.

HERBERT E. HALL resigns from *Rheem Manufacturing Co.* as secretary. He is replaced by GORDON W. MALLATRATT, who will headquarter at plant in Richmond.

D. A. RINGIS is appointed plant manager of *Chrysler Corp.*'s Los Angeles plant. He succeeds C. C. ROWLES, who is assigned special duties in corporation's Plymouth division.

DONALD U. KUDLICH is appointed manufacturing coordinator for machinery divisions of *Food Machinery and Chemical Corp.* He will make his headquarters at

firm's corporate offices in San Jose. WILLIAM L. CAMPBELL resigns as vice president and co-manager of firm's ordnance division at San Jose.

GEORGE B. MCMEANS is appointed vice president in charge of operations for *Kaiser Steel Corp.* His headquarters will be at concern's Fontana plant, where he has been works manager.

HOWARD G. VESPER, president of *Calif. Research*, is elected a vice president of *Standard Oil Co. of California*.

*Monsanto Chemical Co.* names DONALD J. MILLER manager of its phenol and heavy chemicals plant at Avon. He will be replaced as manager of plant at Long Beach by FRANK S. BONHAM.

*North American Aviation, Inc.* names HAROLD RAYNOR administrative director of missile and control equipment departments, Downey, Calif., plant. He was formerly director of material in Los Angeles division.

*Consolidated Engineering Corp.* increases personnel as follows: GARDNER WILSON, recently head of test division of Naval Ordnance in Pasadena, is now in charge of CEC engineering department's mass spectrometer group; DR. PAUL BROCK, former head of mathematics group of Project "Cyclone," becomes chief engineering mathematician of CEC's computer division; and DR. WILSON BRUBAKER, formerly with physics department of *Westinghouse Electric Corp.*, is CEC's new senior research physicist.

RUDOLPH A. ROTHE, secretary of *Ray Oil Burner Co.*, San Francisco, is promoted to position of vice president in charge of export and foreign operations. JAMES J. RUDDEN is elected vice president and controller of firm.

RAYMOND F. STANLEY, formerly a consulting engineer affiliated with *Production Management Engineering Associates*, joins *National Motor Bearing Co.*, Redwood City, as chief industrial engineer.

Several personnel changes at *Utility Appliance Corp.*, Beverly Hills, are as follows: THOMAS N. NORTHCOTE, formerly director of purchases, becomes director of air cooler

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and standard duty blower sales; HERBERT S. LEO, formerly vice president and director of sales, becomes vice president and general manager; BERNARD HARRIS, vice president and secretary, now is selling exports for *Utility Appliance* and for *Mission Appliance and Bauer Electric Manufacturing Co.*

Here are five new appointments in various divisions of *Kaiser Aluminum & Chemical Corp.*, Oakland: RALPH E. KNIGHT, formerly assistant general manager, chemical division, is promoted to a vice presidency and will



F. M. Cashin

R. E. Knight

assume duties of director of research and development for aluminum and chemical divisions; W. R. WOODMAN, formerly manager of chemical division operations, is named manager of aluminum division's raw material operations; FRANK M. CASHIN, who has been general sales manager of chemical division, becomes its manager; JACK W. WATSON, JR., formerly West Coast manager of aluminum sales, is appointed assistant to vice president and corporation general manager; R. A. FRATUS, assistant to comptroller, assumes a newly established position as head of analysis and planning department.

W. R. THELE, executive vice president, and FERDINAND EHRENFELD, vice president and general manager of *Rosenberg Brothers & Co.*, San Francisco, retire from active duty.

CARL KALBFLEISCH, vice president in charge of production, *United Can & Glass Co.*, Hayward, can and bottle manufacturing firm, is also named executive vice president.

FRANK SCARR, previously assistant controller of *Kaiser Steel Corp.*, is promoted to assistant to vice president in charge of operations.

CLARENCE A. CHAFAY, JR., assistant credit manager for *Bethlehem Pacific Coast Steel Corp.*, is assigned to cover accounts in Los Angeles sales district, replacing C. P. DEMOND, who is retiring.

W. FRANK DOWD, Western district superintendent, evaporated milk division of *Carson Co.*, Los Angeles, retires. ROLAND JONES, formerly district superintendent, central district, will take his place.

WARREN W. WHITE is appointed chief engineer of *Electric Cords & Supply Co.*, Los Angeles.

*Tide Water Associated Oil Co.* is promoting and appointing three new credit executives. WILLIAM F. MATSON is named assistant general credit manager, succeeding WALTER V. WOODIN, who retires. WALTER J. DIEHL, district credit manager in Seattle moves to San Francisco to become wholesale credit manager. FRANCIS M. WALKUP, Sacramento, transfers to Seattle to take up duties of district credit manager.

ARTHUR P. BERRY is appointed manager of fatty acid division of *El Dorado Oil Works*, San Francisco.

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*Lane-Wells Co.*, Los Angeles oil drilling servicing firm, appoints **GEORGE F. TURCKE**, chief design engineer, to newly created post of consulting engineer.

*Southern Pacific Co.* appoints **WILLIAM M. JAEKLE** to newly created position of assistant chief engineer. He is succeeded as assistant engineer, maintenance of way and structures, by **HARRY M. WILLIAMSON**, formerly division engineer at Portland, Ore. **GODFREY J. LYON** takes vacated position in Portland. **ROY B. CHAPMAN** becomes general superintendent, maintenance of way shops and equipment; and **JOSEPH A. HOLMES** is appointed construction engineer, both with headquarters in San Francisco. **VICTOR R. COOLIDGE**, formerly of structural design, becomes assistant engineer of bridges. **SHIRLEY WHITE** is named general bridge and building supervisor.

**CHARLES LOHSE**, San Francisco, assistant manager of *Crown Zellerbach Corp.*'s sales promotion department, takes position as director of sales training in corp.'s newly established sales training school.

**RALPH W. SEELY** is appointed vice president and general manager of *Consolidated Western Steel division of United States Steel Corp.*, Los Angeles.

**EDWARD S. HAWKINS** is named vice president and general manager of *Rinshed-Mason Co.*'s West Coast division at Anaheim, Calif. **RALPH MATTERS** is appointed sales manager.

*Solar Aircraft Co.* appoints **EARL D. FOSTER** superintendent of gas turbine production in firm's manufacturing division at San Diego. **ARTHUR P. BROWN** is appointed comptroller at company's San Diego plant.

**PHILIP D. DOERSAM**, formerly chief, flight test engineering department, *Hughes Aircraft Co.*, is appointed manager, West Coast operations, for *Univox Corp.*, Los Angeles.

**JOHN S. LIEFELD** is appointed factory manager of *Marquardt Aircraft Co.*, Van Nuys. Prior to joining Marquardt, he was with *Aircraft Metal Forming Co.* of Burbank.

### Colorado

**COL. V. C. HUFFSMITH** is named interim assistant director of Institute of Industrial Research at University of Denver.

**GORDON E. DAHL**, Denver, is appointed office manager of *Rocky Mountain Gas Association* to replace **HERBERT C. KELLY**, deceased.

### Idaho

**E. W. HANSEN**, manager of *Simplot Fertilizer Co.* operations at Pocatello, becomes sales manager for *J. R. Simplot Co.* at Boise. **L. M. BUEHLER**, chief engineer, is promoted to fill Hansen's position.

### Montana

**R. SANFORD**, manager of *Yellowstone Lumber Co.*, Fairfield, retires.

### Nevada

**MAX J. KENNARD** is named general manager of *Manganese, Inc.*, *Combined Metals Reduction Company*'s subsidiary at Henderson. Further appointments are: **F. R. LEONARD** as assistant general manager; **R. W. LOTTRIDGE** as manager; and **F. B. PETERMAN**, assistant plant manager. **K. K. HOOD** is new chief operations engineer of *Combined Metals* at Pioche.

### New Mexico

**JAMES E. REEVES** is appointed director, office of test operations, of *Atomic Energy Commission's* Santa Fe operations office in Albuquerque.

### Oregon

**J. B. GRANTHAM** is named managing director of *Oregon Forest Products Laboratory*, Corvallis, Ore. He has held position of acting director since last June. Succeeds **PHIMISTER B. PROCTER**, who had been on leave in the Air Force and resigned on returning to Corvallis to take a position in Los Angeles.

**H. JAMES CAULKINS** is being added to industries department staff of *Portland Chamber of Commerce* to take a position vacated by **LOUIS P. GROWNEY**.

Named general manager of *Hyster Europe*, **FRANK A. ROSTEDT** sails for Holland. **WILMER B. MORROW**, chief accountant, will take Rostedt's place as comptroller and assistant secretary. **H. J. MURRAY** is appointed to position of chief accountant of *Hyster Co.*



**H. J. Murray**



**F. O. McMillan**

**FRED O. McMILLAN**, head of the department of electrical engineering at Oregon State College, Corvallis, is selected Oregon's Engineer of the Year by *Professional Engineers of Oregon*.

**WALTER C. MILLER** is named plant engineer of *Coos Bay Pulp Co.*, Coos Bay, Ore. He succeeds **JOHN A. ANDERSON**, who transfers to Soundview division of *Scott Paper Co.*, at Everett, Washington.

### Utah

**LOUIS BUCHMAN** is retiring from his position as vice president and general manager of Western operations of *Kennecott Copper Corp.* **E. W. ENGLEMANN**, assistant general

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manager of *Utah Copper* division of Kennecott also retires.

E. ALLEN HUNTER of *Utah Power & Light Co.*, is named assistant to vice president in charge of operations.

## Washington

*Cedargreen Frozen Pack Corp.*, Bellingham, affiliate of *Pacific American Fisheries*, elects EDWARD E. WILKIE head of Cedargreen. NORMAN CEDARGREEN is promoted to post of chairman of board.

EDWARD T. LOCKWOOD of Seattle, vice president and general manager of *Pacific Telephone & Telegraph Co.*, is appointed

## ASSOCIATIONS ELECT

PHILIP T. FARNSWORTH, formerly *California Redwood Association's* promotion division director, is named new general manager. He succeeds SHERMAN A. BISHOP, resigned to join *Union Lumber Co.*

*Trailer Coach Assn.*: President, HAROLD HAULIARE, president of *Hadco Engineering Co., Inc.*, Huntington Park, Calif.

*California Processors and Growers, Inc.*: President, PHILIP N. MARK, general manager of *Tri-Valley Packing Assn.*, San Francisco; vice president, GEORGE A. GOODING, vice president in charge of Pacific Coast canned foods production of *California Packing Corp.*

*Western Lighting Manufacturers Institute*: President, PHILLIP FREEMAN, *Sunbeam Lighting Co.*, Los Angeles; vice president, LEONARD ROSENBLATT, *Globe Lighting Products*; secretary-treasurer, JOSEPH MARX, *Nu-Lite Fluorescent Manufacturing Co.*; and chairman, membership committee, STANLEY LINDAHL, *Light Control Co.*

*Merchants and Manufacturers Association*, Los Angeles: President, WILLIAM HOLZHAUER, manager of *Aluminum Co. of America's* Vernon works; chairman of executive committee, BRYANT ESSICK, *Essick Manufacturing Co.* Newly elected vice presidents are: ROBERT J. CANNON, *Cannon Electric Co.*; R. G. KENYON, *Southern California Edison Co.*; and ROBERT MITCHELL, *Consolidated Rock Products Co.* Other elective positions filled are: secretary, DANIEL P. BRYANT, *Bekins Van and Storage Co.*; and treasurer, J. B. VAN NUYS, *I. N. Van Nuys Building Co.*

*Radiant Heating Institute*, Los Angeles: President, JOHN J. COLE; vice president, FRANK NEAL; and secretary-treasurer, J. F. HEASLETT.

*West Coast Electronics Manufacturers Association*: President, NORMAN H. MOORE, chief engineer of *Litton Industries*, San Carlos, Calif.; vice president, ED GRIGSBY, sales manager of Western division of *Altec-Lansing Corp.*, Beverly Hills; secretary, DON LARSON, advertising director of *Hoffman Radio Corp.*, Los Angeles; treasurer, H. MYRL STEARNS, vice president and general manager of *Varian Associates*, San Carlos.

*Professional Engineers of Oregon*: President, ROBERT C. SHOEMAKER, supervising engineer in charge of construction machinery design and patents for *Hyster Co.*; vice president, H. LOREN THOMPSON, partner in *Stevens and Thompson*, consulting firm;

assistant vice president of *American Telephone & Telegraph Co.*, New York. He is replaced in Seattle by GEORGE M. DEAN, formerly assistant vice president, who is succeeded by B. E. BOWLING. GUY C. CHILBERG becomes general plant manager. D. J. ROBBINS is named general plant supervisor.

DR. WALTER F. HOLZER, Camas, assistant director of research for *Crown Zellerbach Corporation*, is promoted to a newly created position as assistant to vice president in charge of manufacturing.

WILLIAM VARNEY of *Varney Canning Co.*, Roy, Utah, is expanding his operations in Washington by take-over from *RFC of Sunnyside Packing Co.*, Sunnyside.

secretary, ELLIOTT B. HIGGINS, application engineer, *Woodbury and Co.*; treasurer, PAUL D. CHRISTENSON, manager, creosoting department, *Pope and Talbot, Inc.*

G. ROBERT RODEN, JR., vice president of *Southern California Chapter of The Producers Council, Inc.*, will serve as acting president for remainder of this year. He replaces BERT TAYLOR, who is leaving for Dallas, Texas, where he will be national sales manager for *Universal Corp.*

*Los Angeles Chamber of Commerce*: President, ROY M. HAGEN, president of *California Consumer's Corp.*; vice presidents, F. MARION BANKS, president of *Southern California Gas Co.*; CHARLES DETOY, of *Coldwell, Banker and Co.*, and STUART M. SALISBURY of *McClean, Salisbury, Petty and McClean*. TERRELL C. DRINKWATER, head of *Western Air Lines*, is newly elected treasurer.

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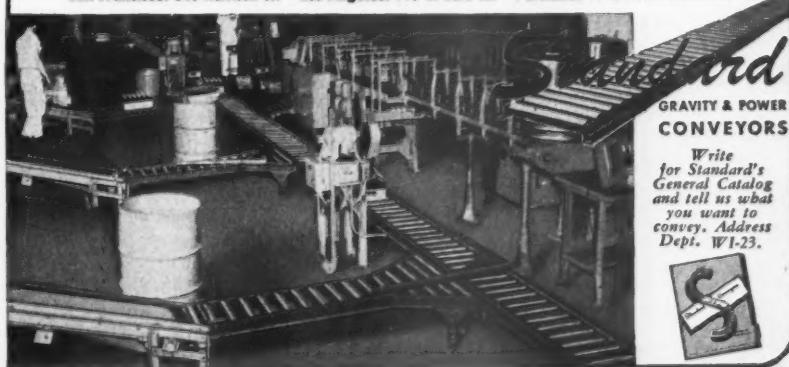
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Vic Fawcett

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Yes, year after year we have enjoyed the growing friendship of our many customers who share with us the faith in the future that makes for happy and prosperous activities.

Here in the West, Lufkin has endeavored to keep pace with the industrial growth that makes every new year a challenge to our ingenuity. And we like this test of our skill and service. Day in and day out, year by year, we have faced the demands of Western industry with enthusiasm, and constantly expanded our organization and production to keep one step ahead of your requirements. That's why we know that your needs for today and tomorrow will always be our responsibility, and we will never trust to luck in serving you.

So join with us if you will in the old fashioned custom of Ham and Black-eyed Peas . . . for the idea is quaint . . . but be assured that Lufkin folks will always realistically deliver the bacon!

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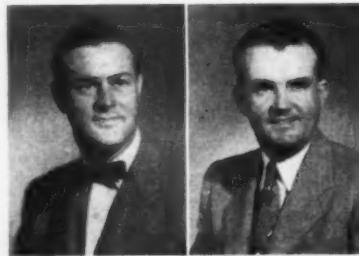
# Western TRADE WINDS

## News about those who distribute and sell industrial equipment and materials

*Robco, Inc.*, 4557 E. Slauson Ave., Maywood, Calif., starts operations as an outgrowth of specialized items department of *Robert H. Braun Co.*, Los Angeles. New



Robco, Inc., Maywood, Calif.



W. Gaskill

D. S. Ferguson

firm is an exclusive distributor for Aerol casters and wheels. President of new company is DON S. FERGUSON. WILLIAM GASKILL is vice president and general manager.

*Drake Steel Supply Co.* names JOHN FINN sales manager with headquarters in Los Angeles. He was formerly manager of *Triangle Steel Products Corp.*'s steel department.

*Aluminum Import Corp.*, United States distributor for *Aluminum Co. of Canada, Ltd.*, opens a sales office located at 510 W. Sixth St., Los Angeles. ROY A. GENTLES of Toronto is in charge of office.

*Aetna-Standard Engineering Co.*, Pittsburgh, Pa., appoints W. G. HOFFMAN as firm's West Coast representative. His offices are in San Mateo, Calif.

ROBERT M. GRIFFIN, Phoenix, is named sales representative for *Automatic Transportation Co.*, manufacturer of electric industrial trucks. His territory includes Arizona and New Mexico.

ARNOLD H. FINNERN, formerly *United States Rubber Co.*'s Los Angeles district sales manager, becomes sales manager of company's Pacific Coast division. He succeeds LOUIS J. HEALEY who is named sales manager of general products with headquarters in Providence, R. I.

G. R. RODEN is newly appointed Pacific Coast manager of *Truscon Steel Division of Republic Steel Corp.*, with headquarters in Los Angeles.

*Standard Wire & Cable Co.* is newly appointed Southern California distributor for following firms: *American Steel and Wire Division of United States Steel Corp.*—electrical wire and cable; *Hitemp Wires, Inc.*, of Long Island, N. Y.—insulated wiring. Dis-

tributing firm recently moved to new quarters at 3440 Overland Ave., Los Angeles.

*Pacific Airmotive Corp.*, Burbank, Calif., is named distributor for all products manufactured by *Titeflex, Inc.* Each of Titeflex's eight products will be sold nationally and for export by PAC's five sales branches.

*W. H. Eddy Electric Products, Inc.*, agents for *Kuhlman Electric Co.* in Phoenix, Ariz., open a branch office in Albuquerque, N. M. Branch is managed by CARL H. JOHNSON. *Sales Engineers Co.*, Kuhlman agent in Denver, opens a branch in Salt Lake City under management of RUSSELL BUCHANAN.

HAROLD J. BUZICK joins *Porter Muffler Manufacturing Co., Inc.*, Los Angeles, as sales manager.

*Strong, Carlisle and Hammond Co.* of Cleveland, Ohio, is appointed national distributor for Borgana boiler water treatment developed by chemical division of *The Portland Shingle Co.*, Portland, Ore.

ANDREW C. PERRIN of *Reliance Electric & Engineering Co.*, electric motor manufacturer in Cleveland, Ohio, takes firm's newly created post of West Coast district sales manager. His headquarters are in San Francisco.

J. M. COSGROVE is appointed to newly created position of manager, tin plate sales, of *Kaiser Steel Corp.* His headquarters are at company's home office in Oakland. He was formerly Kaiser Steel's Northwest district sales manager at Seattle.

W. R. LOCKWOOD is appointed manager of *Joseph T. Ryerson & Son, Inc.*'s Seattle



C. W. Summerville W. R. Lockwood

steel service plant. He succeeds C. W. SUMMERVILLE who now serves as advisory consultant to Ryerson management.

CHARLES R. LONG, Pacific Coast district lamp engineer for *Westinghouse Electric Corp.*, transfers headquarters from Los Angeles to San Francisco. EARL F. LARSON takes newly created position of south Pacific Coast district lamp engineer, with headquarters at Los Angeles.

*Western Fibrous Glass Products Co.* is named West Coast distributor for *Resistoflex Corp.* of Belleville, N. J., manufacturer of aircraft and industrial hose assemblies and plastic products. Formerly called *West-*

ern Fiberglas Supply Co., distributing firm maintains offices and warehouses in Los Angeles, San Francisco and Seattle.

W. J. F. FRANCIS is appointed Western general sales manager of *American Potash & Chemical Corp.* Succeeding DAVID B. SCOTT, retired, he will be in charge of company's Western sales office, Los Angeles.

*Ethyl Corp.* names PAUL R. HARRIS manager of its West Coast chemical sales. Previously safety engineer for company in Seattle, he will now headquarter in San Francisco.

*Hapman Conveyors, Inc.*, Kalamazoo, Mich., manufacturer of tubular materials conveyors for metal chips, abrasives, food and chemicals, appoints *Davis Material Handling Co.*, Los Angeles, as its Southern California representative.

GEORGE S. KARIOTIS becomes sales manager of Southern California branch office of *Sprague Electric Co.*, Culver City, Calif. He succeeds THOMAS S. BILL, who joins Johns Hopkins University in applied physics laboratory. Kariotis will headquartered in Los Angeles. MARTIN DAIGNEAULT will assist in firm's sales administration, also in Los Angeles.

THEODORE M. BARRY joins ROBERT J. BARRY, Los Angeles management engineer, as partner, and firm name is changed to *Barry and Co.*

*Huck Manufacturing Co.* of Detroit contracts with *Deutsch Co.* of Los Angeles for exclusive distributorship in United States and Canada of Deutsch drive pin blind rivet. Product was formerly known as Barker

blind rivet and is made under *North American Aviation, Inc.* license.

*R. & J. Dick Co., Inc.*, Passaic, N. J., appoints E. P. MCKENNA Western regional manager. He will continue to operate out of



E. P. McKenna



P. R. Wallace

firm's Seattle office which serves Pacific Northwest states, British Columbia, Alberta, and Alaska. PAUL R. WALLACE is named company's San Francisco branch manager. He replaces EARL R. SEWALL, deceased.

J. F. POLHEMUS, formerly sales administrator for *Western Livestock Mineral Co.*, is named manager of dairy and food sales for *Kelite Products, Inc.*, Los Angeles.

KENNETH J. FLETCHER is newly named by *Allis-Chalmers Manufacturing Co.* as sales representative to its Portland district office. *Williams Electric Motor Service & Supply*, Grand Junction, Colo., and *Munnell & Sherrill, Inc.*, Portland, Ore., are named distributors for Allis-Chalmers motors and controls.

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RUTH D. McCOWAN  
 1634 "E" Street, San Bernardino, Ph. 868-47

comes welding application engineer in corporation's Los Angeles office. He transfers from Milwaukee, Wis., where he held a similar position.

HARVEY R. FIFER is elected vice president of *Brea Chemicals, Inc.* He will be in charge of marketing.

*Armstrong Bros. Tool Co.*, Chicago, moves its Pacific Coast warehouse and sales office to ground floor quarters at 67 Eleventh St., San Francisco.

*Marshall-Wells Stores* sponsor their "Silver Jubilee Congress" February 23rd and 24th with all Associate Dealers, their wives and employees guests of company at Spokane, Washington's, Display Mart.

*Insul-Mastic Corp. of America* names *Rust-Proofing, Inc.*, Phoenix, Arizona, as one of its representatives.

*Dunning Iron Store Co.*, Los Angeles, changes ownership to HARRY S. WEISS. Location remains same.

JOHN CALVIN is named hydraulic sales engineer of Pacific division, *Bendix Aviation Corp.*, North Hollywood. CHARLES E. RUCKSTUHL becomes electronic sales engineer.

*Panama Lamp & Commercial Co., Inc.*, is named Pacific Coast distributor of Luve-Tile, a plastic illuminated ceiling manufactured by *J. A. Wilson Lighting & Display*, Buffalo, N. Y.

W. M. COOPMAN, formerly division chief engineer for *Republic Supply Co.*, becomes district engineer for *Marlow Pumps* of Ridgewood, N. J., in Southern California, Arizona, Nevada, and Utah.

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Since the pressed metal fabricating industry is a supplier industry, it follows that the industry develops new processes rather than new products in the generally accepted sense.

Most interesting of these processes, and the one which will probably have greatest impact on our industrial economy, is the development of the cold extrusion process.

Both the pressed metal fabricator and the consumer are much more quality conscious than ever before, largely because of the impetus provided by World War II. Quality has consistently come up, and it will continue to do so for the life of the industry.

Refinement of old techniques and addition of new techniques have enabled the industry to manufacture to much closer tolerances and to do a great many things hitherto considered impossible.

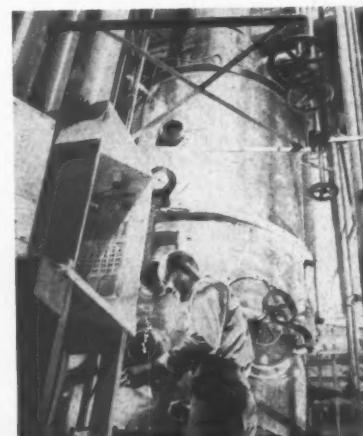
The market for metal stampings is an ever-increasing one, and this trend will accelerate when adequate supplies of raw materials are available for the production of civilian goods.

The industry has a great many top engineers with imagination and vision who are able to replace castings, forgings, and other products with metal stampings, or assemblies of metal

stampings, which results in an end product of greater strength and lighter weight.

Before this trend can become manifested in substance, adequate supplies of flat rolled metals must be available, and suppliers of raw materials must not only assure the adequate supply but must furnish the tempers and analyses to suit fabricators' requirements. This means also, that metallurgical development must keep pace with the industry.

Vacuum pan in orange juice canning operations, in Sunkist's plant, Ontario, Calif.



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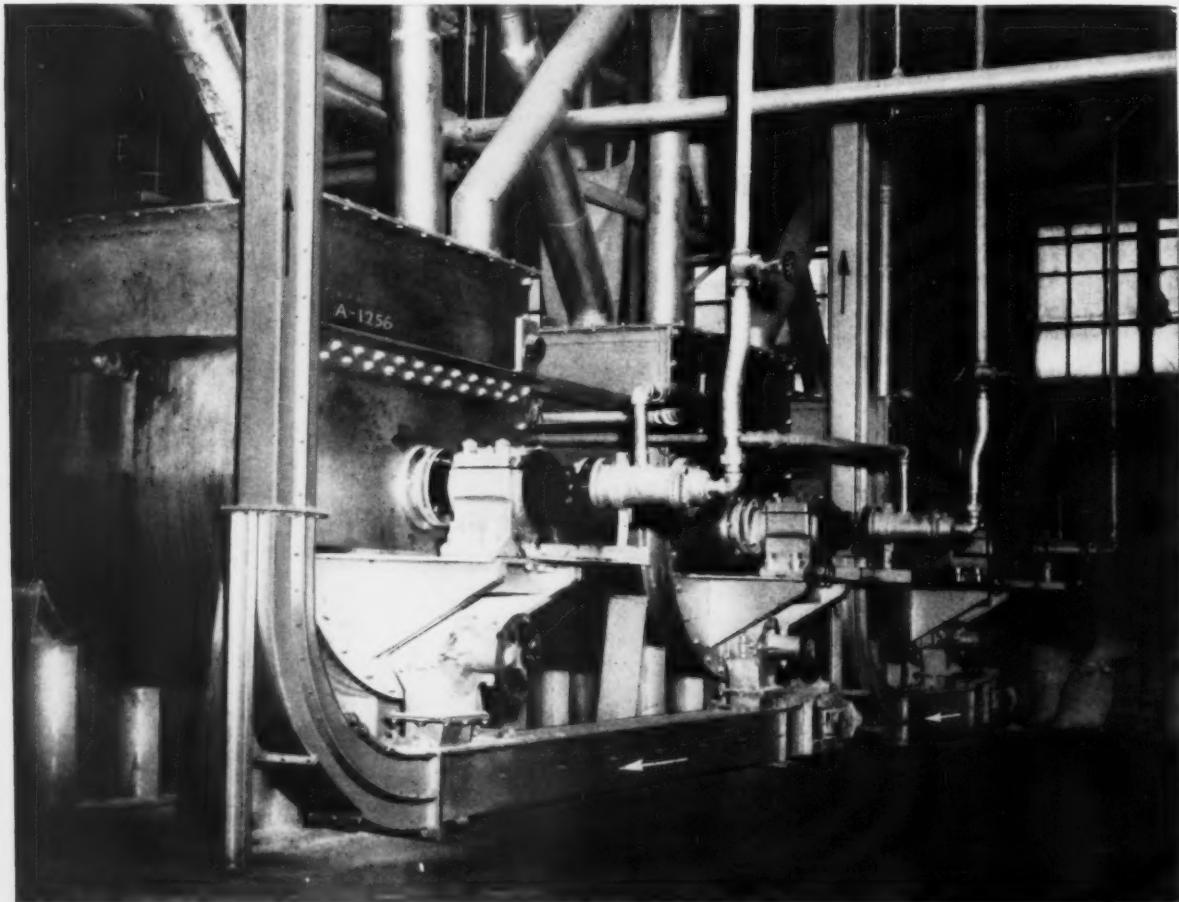
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